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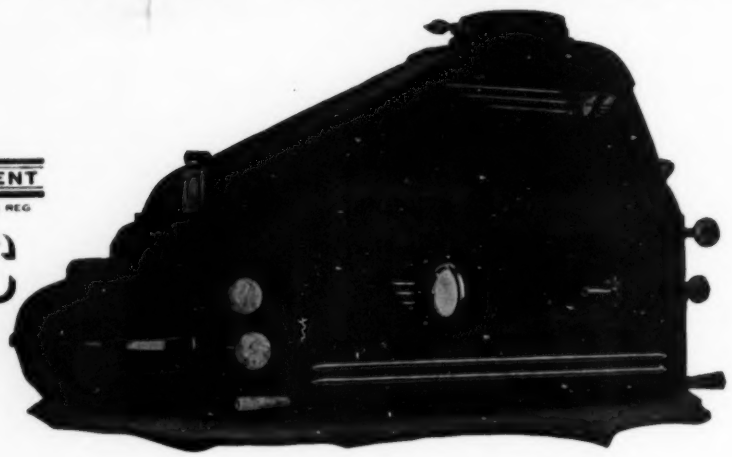

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MONTHLY CHAT

SO FAR nobody has suggested that projectionists are angels. But they're not magicians either! This latter idea was booted about at the recent Allied meeting in Boston by the head of a well-known service company — and IP's a bit peeved at the guy.

The trouble with 3-D projection, he told an audience of theatre owners, is the projectionist.

According to the knowing gentleman, the boys in the hot box take a devilish delight in lousing up the works. They don't give a hoot whether the twin films are in sync or not. They play games with the sound equipment and raise hob with the show. Meanwhile, the speaker opined, the poor exhibitor tears out his few remaining hairs — and gives the customers their money back.

Come to think of it, IP's more than peeved. We're roaring mad!

Let's look at the record. When the going is good, the boys in the projection rooms are kicked around, their role in putting on a good show minimized. But when new systems arrive, the exhibitor, who doesn't know a sprocket from a leader, suddenly becomes acutely conscious of the guys upstairs. He asks his projectionists' advice about new equipment. He depends on his crew to keep the customers happy — and to keep them coming back for more with admission money clutched in their hot little fists.

Then along comes this fellow from the service company (who made the trip to Boston in the first place to do some ingratiating with his exhibitor customers) and he tries to get himself, and others, off the hook by blaming everything that's wrong with 3-D on the projectionist!

May IP respectfully suggest that, while the projectionist does slip sometimes, the big fault with 3-D lies with the exchanges. Beat up prints, unmatched prints, prints spliced out of sync, prints with screwball start marks. These little items can raise more hell with 3-D projection than anything else.

When we come right down to cases, stereo troubles began when the motion picture industry jumped into it with both feet before it was ready for 3-D, and before 3-D was ready for the industry. Cinerama started the scramble — and everybody tried to get into the act.

The exhibitor, bless him, will spend all kinds of money on the front of the house, skimp when he can on his projection equipment — and then try to blame the projectionist if everything isn't perfection. The gentleman in Boston was simply playing the role of Mr. Echo.

Cauldron boil . . . and kettle bubble . . .

Difficult though they may be, situations like these *do* come off; thanks to the care with which film and chemicals are keyed to specific photographic situation and production methods; thanks, also, to the rigid control of processing solution strength and temperature.

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VOLUME XXVIII OCTOBER 1953 NUMBER 10

Film Industry Eyes New Stereo Sound

Panaphonic system, described here for the first time, provides full stereophonic effect with extremely low cost compensating for the higher fidelity of the sound-on-film magnetic systems.

By THOMAS L. BURNSIDE

CONSIDERABLE INTEREST is being shown in Hollywood and New York in an amazingly simple optical system for stereophonic sound developed by Dorsett Laboratories, Inc., of Norman, Oklahoma. The system, dubbed Panaphonic, by Loyd G. Dorsett, president, is now being used extensively in test theatres in the Southwest and has been demonstrated on the Coast. As this is written arrangements are being made for a demonstration in New York at the behest of technical heads of several of the major film companies.

Details of the Panaphonic system are revealed for the first time, and exclusively, in this article.

Chief beauties of the system, according to Dorsett, are its simplicity and extremely low cost. The sound unit itself, mounted between the projector casting and the top magazine in the same manner as the Fox-developed penthouse magnetic sound head, is barely an inch and a half high and, in all essentials, is the familiar optical arrangement of exciter lamp and photocell.

"Recent developments in motion picture sound techniques have left many exhibitors wondering what sort of equipment to buy," Dorsett told this writer, "and they wonder whether any of them can really justify the cost. That's where this system comes in.

"Unquestionably, many theatres could benefit from the installation of stereophonic sound, whether they use photoelectric or magnetic tape pick-up," he went on, "but some owners are wondering whether the public's interest will last or not and they worry about making the substantial investment required for magnetic systems."

In this writer's opinion, based on solid tests made in the industry, magnetic sound offers much higher fidelity than any optical system. However, for many years the public found enjoyment in films using the old optical sound. Thus the issue resolves itself to one of cost.

The Dorsett sound directional system, the company claims, is compatible with all other sound systems. We wonder, after looking at the Dorsett mounting atop the projector casting, how the Fox four-track-on-one-film, which is mounted in the same spot, could be by-passed.

How System Works

The Panaphonic system, which uses darkened intersprocket spaces as control tracks, operates as a binary signal system from darkened inter-sprocket spaces on both sides of the film. Old films with optical tracks can be cued for the system in a manner to be described later on. Old films, Mr. Dorsett said, may occasionally be cued on the outer edges.

The darkened areas are sensed by two small photocells and their amplified outputs operate ordinary relays or relay tubes arranged in two binary "decades", thus promoting four "modes", or loudspeaker combinations. Those generally used are 1) centerscreen horns, 2) right side horns, 3) left side horns, and 4) all speakers, including side and rear of the auditorium.

Photoelectric control tracks of various positions and designs have, of course, been used before. But the Panaphonic system is extremely simple, and should be reliable, because of its binary character. Dark-

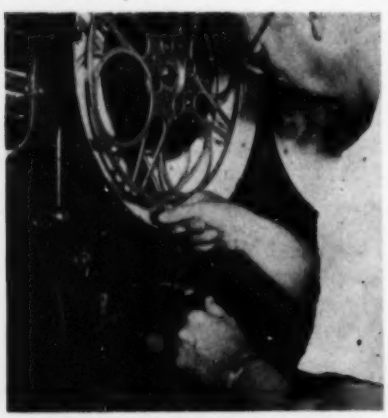
ened areas are, obviously, either present or absent on either side of the sprocket holes and it is thus possible to cue in special effects in a moment with a marking pen and a pair of rewinds. A special instant drying ink has been developed and has withstood more than a hundred screenings, yet it can be wiped off with a damp cloth and a solvent. In new prints, of course, the film would be darkened photographically.

It should be noted that each "mode" or combination of speakers must accept the entire sound signal in the case of single track films and that separation of sounds heard simultaneously cannot be obtained. However Dorsett engineers claim that considerable experience with cueing existing films has shown that this effect can psychologically be closely approximated by rapid and careful sequential shifting of modes by Panaphonic's automatic system.

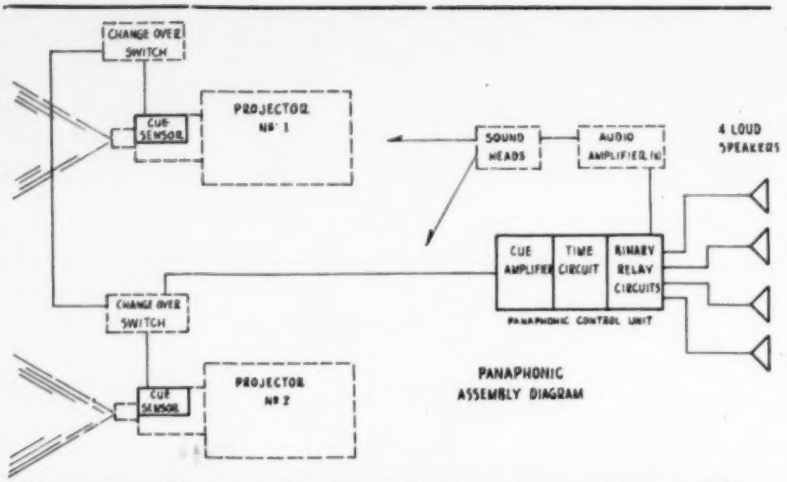
"Most moviegoers," Mr. Dorsett said, "do not notice the difference between Panaphonic and other stereophonic systems, except that, since the new system uses auditorium speakers more freely, emotional impact is greater."

It is conceivable, he added, that two photoelectric sound tracks might be provided, compatible with present movietone prints. In this event, the Panaphonic system could present separated simultaneous sounds in any combination of directions detectable in the auditorium.

The projection room equipment consists of a cue sensor for each projector and an enclosed, or rack mounting, chassis containing cue amplifiers, a filter, a timing circuit and multiple contact relays.



Threading for Panaphonic is accomplished by sliding the film into a slot on the side of the sensor unit. Alignment is automatic.



Above is an assembly diagram of the Panaphonic system. The sensor unit, mounted "penthouse" style above the projector casting, consists of an exciter lamp and two tiny photocells.

The cue sensor is a small box, about an inch and a half high, containing the two photocells and a light source. It may be mounted in a thin "button on" unit on top of the projector head so that the film is drawn downward through it by the first sprocket in the head. There is no change in the conventional threading motions and the film is automatically aligned in the sensor.

The cue lead is adjusted by the timing circuit to conform to the type of projector used. This timing circuit, together with the filter, also serves to eliminate spurious cues due to film splices or other causes.

This equipment Dorsett said, has been installed in a number of theatres of varying sizes. In some, having only one amplifier, no additional audio power was required to operate the auditorium or side speakers. In some installations a second sound amplifier is recommended in order to handle the extra power for the side and rear speakers. Also, in certain installations it has been found advisable to install filters in the side speaker circuits for better acoustical balance.

Development of the system, largely in the field, covered a period of many months. Units are now installed in 14 theatres and have been tested for the past three months, Dorsett said.

Films are presently being hand cued using the dye developed at the Dorsett Laboratories for the purpose. The time required for hand cueing an average full length feature picture is about twelve man hours for the first print, and from one to two hours for extra prints. It is anticipated, however, that major studios may soon be releasing prints photographically cued for the Panaphonic system. These cues will not interfere in any way with other stereophonic tracks or marks currently in use, hence will permit the use of the same film in other systems.

Demonstrations of the Panaphonic system have been held in Hollywood under the sponsorship of the Motion Picture Research Council. These demonstrations were held in the Paramount Studio theatre and were attended by sound experts from most of the major studios. One picture shown in the system, with the hand cueing, was Paramount's "War of the Worlds."

Public acceptance is being tested throughout Oklahoma and in parts of Texas by the Video Theatres chain. With the specially cued feature films, a trailer cued for all four modes is shown as a demonstration.

Loren L. Ryder, Paramount's research chief, was interviewed by IP on the system when he came East for the SMPTE convention. He was enthusiastic.

"This is the first move towards simplicity this year," he said.

Dorsett Laboratories is a research and development group which has been engaged primarily on classified projects for the armed forces. In the development of Panaphonic it has borrowed from techniques evolved during military research. The laboratory, Dorsett said, is currently working on two other projects for the motion picture industry.

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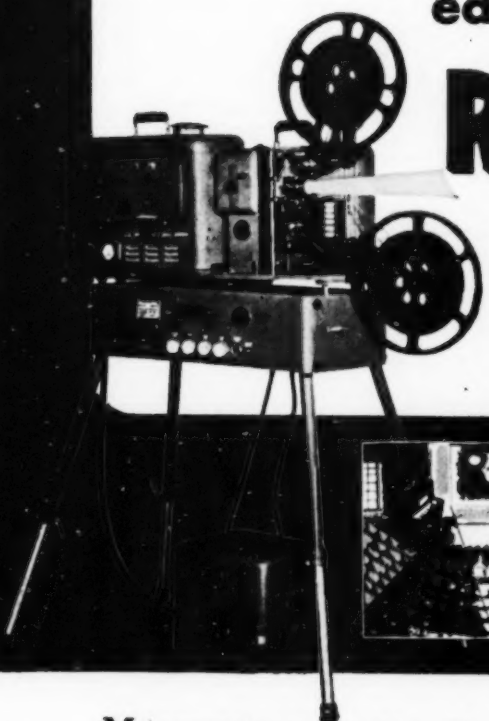
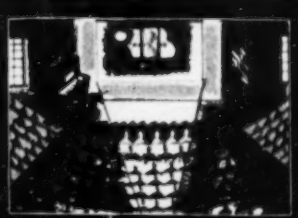
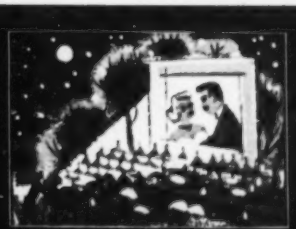


RCA PORTO-ARC 16mm PROJECTOR





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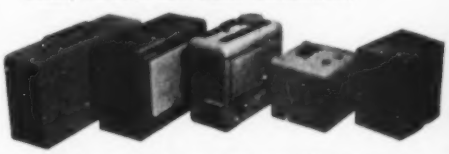

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Stereoscopic Projection and Photography

This article examines some single-film methods of projecting 3-D, the beam splitter, sequential-frame and Vectograph, and then discusses projection problems of the now familiar double-film system used nationally in theatres.

III - *History and Projection Techniques*

By ROBERT A. MITCHELL

POLARIZED-LIGHT 3-D began in America with the exhibition of a Norling film at the New York World's Fair in 1939. This was shown *via* two projectors synchronized by a selsyn interlock. In 1940 J. A. Norling* produced and exhibited a 3-D film in Technicolor.

The Norling productions, however, were not quite the first in the field, though they were undoubtedly seen and enjoyed by a greater number of persons than any previous attempts at polarized-light motion-picture stereoscopy.

At the risk of evoking heated arguments, we herewith report that the October, 1952, issue of the German publication, *Bild und Ton* (Picture and Sound), published by Zeiss Ikon in Stuttgart, describes a stereoscopic color sound film exhibited in Berlin in 1937. In the Zeiss system of 3-D, the two pictures of the stereopair were placed on a single frame of 35-mm film, and projected through a lens that had been provided with deviation wedges and polarizing filters.

It is noteworthy that the German technologists have concentrated almost exclusively on single-film variants of the polarized-light process, and are unable to foresee a commercial future for the double-film method. The present Zeiss 3-D process is a single-film, single projector system that makes use of optical beam splitters of special design. Both pictures of the stereopair are side-by-side on the same frame of film and projected through one machine.

However, since the projection beam-splitting attachment contains the polarizing filters, we wonder how the heat produced by the absorption of radiant energy by these filters is dissipated and prevented from damaging the optical components. We also wonder, with skeptical mind, to what extent screen illumination suffers with the Zeiss Ikon single-strip system.

Many projectionists and other motion picture technicians have wondered why "sequential frame projection," in which the left and right-eye images follow one another in rapid succession, cannot be used for 3-D showings. It might seem that a satisfactory illusion could be produced by this simple single-strip system. Such, unfortunately, is not the case.

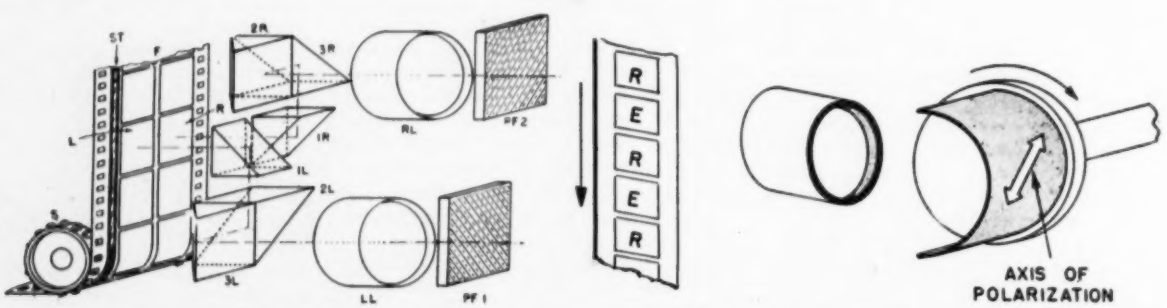
The flicker visible to each eye in sequential-frame 3-D is very great even when the rate of film-travel is doubled. The left eye receives no image all the time the right-eye picture is on the screen, and *vice versa*. The extended periods of darkness for each eye combine with the shutter cutoffs to produce an annoying irregular flicker.

But even worse than the flicker are the dizziness, headache, and nausea resulting from the rapid left-to-right and right-to-left "switch-overs" of vision. There is no escaping these disagreeable symptoms unless projection speed is stepped up to several hundred frames per second — an impractical expedient.

So much for the 2-strip, the "divided-frame," and the sequential-frame systems. We are now left with one more variant of the polarized-light 3-D process. This, the most fascinating of all, is the so-called Vectograph now being developed by the Polaroid Corporation.

As applied to motion-picture projection, the Vectograph method requires only one strip of special film and no filters of any kind over the projection lens.

* Mr. Norling is a pioneer in the field of stereo motion pictures. An article on the present Norling 3-D camera appeared in the June 1953 issue of International Projectionist.



Two methods of projecting stereoscopic motion pictures with only one strip of film are illustrated in the above diagrams taken from the article "Stereoscopic Motion Pictures," by John A. Norling, which appeared in IP for February 1952. On the left is shown a beam-splitter system similar in principle to the Zeiss Ikon method to which Mr. Mitchell refers. The two images of the stereopair are placed next to each other on the same film frame. The two images are also turned on their sides so as to fill the entire frame while retaining their height-to-width proportions. When projected through the prism system, the images are turned right side up and each is directed to a separate lens and Polaroid filter. The numbers and letters in the diagram trace the passage of the images from the film through the prisms. The diagram on the right describes the sequential-frame method of projecting 3-D, which places left and right images on successive frames of the same film strip. A revolving polarizing filter synchronized with the projector movement changes its axis of polarization by simply revolving. This system is simple but, so far, of no commercial value because of the resulting eye strain. On page 12 a diagram illustrates an experimental single-strip 3-D system known as Vectograph. This method may shortly become very important in the battle of the new processes.

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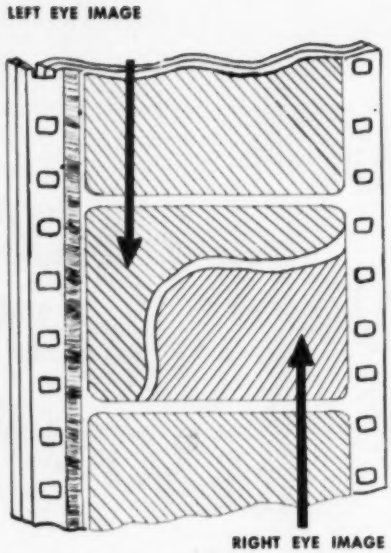
The secret of the Vectograph lies in the fact that the axes of polarization of the superimposed left and right images are crossed at right angles. The result on the screen is exactly the same as that obtained by the present 2-projector setup — *except that there are no light losses due to Polaroid filters over the projector lenses.* The audience, however, is still required to don Polaroid glasses in order to view the picture in three dimensions.

There have been two serious drawbacks to the Vectograph, at least up to now. First, it is rather expensive, not in line with the price-structure of release-print costs. Second, "wrong-eye" ghost images are more troublesome than in the present 2-strip method.



Above is a simplified drawing illustrating the principle of the experimental Vectograph motion picture system. It would require only one projector because the two images of the stereo-pair are placed on the same film-frame — one in the front and one on the back of the film.

Two-Strip Method

There's no denying that the present 2-strip stereoscopic projection process requiring two synchronized projectors is a cumbersome makeshift. This unsuitable process was introduced simply because it is the easiest way for the producer to bring 3-D pictures to the ultimate consumer, the theatre patron.

A more professional process, such as the Zeiss Ikon single-film system, similar in most respects to the process championed in the United States by Nord, involves serious picture-illumination and filter-heating problems. The use of a single *wide* film, requiring special projector mechanisms and soundheads, would be an expensive risk so long as the public views 3-D with faintly amused indifference.

At any rate, the flame of novelty is still burning, and many of the projectionists who have not yet encountered 3-D will soon have the opportunity to try their hand at it. There is nothing mysterious about stereoscopic projection either in principle or in practice — though the practice is a bit of a nuisance when it involves two picture films which must be run in exact synchronism, maintained in proper register on the screen, and provided with equal illumination at all times. It is easy to see that the projectionist enters very intimately into the process, and that inattention to any one of the many details of technique could easily ruin the whole show.

What 3-D Requires

Well, let's begin at the beginning. The average theatre has a projection installation consisting of two projection machines, a sound system, and one or more motor-generators or rectifiers to supply the arc-lamps with power. The projector magazines, rewinder set and film cabinets are made to accept reels of 2000-foot capacity. The lenses are probably old-style uncoated ones, possibly a trifle scratched; and the screen is likely to be matte white. And now 3-D comes along. What new equipment will have to be purchased? Which components of the present "orthodox" equipment will have to be changed?

The projector magazines, rewinder, and film cabinets all require replacement. Standard 2000-foot reels are nearly 15 inches in diameter, and hence are accommodated by 16 and 18-inch film magazines. But 3-D reels hold up to 5000 feet of film (for 50 to 55 minutes of continuous showing) and are 24 inches in diameter. For these larger reels the following are needed:

Two 25-inch upper magazines with reel-end alarms.

Two 25-inch lower magazines with take-up gearing.

One rewinder for 24-inch reels (if the old rewinder cannot easily be blocked up).

One film cabinet big enough to hold at least six 24-inch reels.

In theatres where a steep projection angle exists, it may be necessary to purchase two upper-magazine tilt-blocks in order that the upper magazine tip back and clear the front wall of the projection room. If there is a clearance of at least a foot between your present 16-inch upper magazines and the front wall — or 10 inches of clearance if 18-inch magazines are used, — the tilt-blocks will not be necessary.

Placing Projectors

Moving the projectors back a few inches to provide the necessary clearance may necessitate a slight lowering of the projector port-holes.

It should be noted that certain old-style projector bases cannot accommodate the larger lower magazines. These must be replaced by regular pedestal-type bases, and the soundhead and projector-mechanism drive-gearing will likewise have to be modernized.

The next item, the interlock equipment which insures synchronous operation of the two projectors, demands the most careful consideration. To "economize" by installing a homemade interlock is the surest way of inviting serious trouble. Factory-made mechanical interlocks work quite well; but because the revolving cross-shaft connecting the two projectors is fitted to gear-reduction boxes mounted in front of the soundheads, installation difficulties are almost insuperable when control cabinets, switchboards, amplifying equipment, etc. are mounted on the front wall between the projectors.

The cross-shaft is from 25 to 35 inches above the floor, depending on the projection angle, and from 5 to 15 inches from the front wall. This shaft is fitted with universal joints at both ends for smooth, vibration-free running, and is of the proper length when the distance between the projection-lens centers is 6 feet or slightly less. For shorter distances the sleeve in the middle of the shaft should be removed and equal amounts sawed off the two halves of the shaft. The shaft sleeve should then be replaced and tightened only after the gear-boxes are in their final positions.

(Continued on page 33)

SOME STRAIGHT TALK ON 3-D AND WIDE SCREEN PROJECTION

"How much *more* light do I need for my new movie system?" That's the question everyone's asking today. Now is the time for specific, *factual* data on light requirements for 3-D and expanded screen projection.

With this need in mind, research and development engineers of National Carbon Company have collaborated on a treatise on screen light for the new motion-picture systems.

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- Information *anyone* can use for a better understanding of the lighting problems peculiar to exciting new stereoscopic and wide screen systems.

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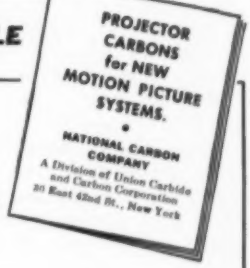
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Highlights of the SMPTE Fall Convention

By FREDERICK HODGSON

THE 74th semi-annual convention of the Society of Motion Picture and Television Engineers (October 5th to 9th inclusive) closed in New York amid a general feeling of optimism for the future of the film industry. Possibly due to conflicting dates, such as the hectic meetings of the Allied States theatres in Boston, attendance was somewhat below normal in spite of the fact that this was the first SMPTE convention since the new developments avalanche really began to roll.

Among the engineers the concensus was this: "Cinerama ? 3-D ? CinemaScope ? Heck, we aint seen nothin' yet !"

Backing up that sort of thinking was Twentieth Century-Fox's Earl Sponable who announced plans for showing CinemaScope in drive-ins on a 135-foot screen. At the Fox aspect ratio of 2.55 to 1, that means a screen almost 55-feet high. One engineer almost swallowed his pipe. Others just gasped.

The buzz-buzz in the corridors went this way:

Fox is responsible, with its four-track single-film magnetic sound, for reproducer redesign. Responsible, too, for a new era in screens with the lenticulated Miracle Mirror, Astrolite and others. Also for violent changes in projection lighting.

And now, Detroit may have to redesign automobiles !

How, went the questions, will a couple in the back seat of a low-slung 1954 sedan see the top of a 55-foot drive-in screen? Or does a couple in the back seat of a sedan give a damn about the screen anyway ?

To supply the terrific amount of light needed for a 135-foot screen a new and powerful lamp, using principles new to motion picture projection, was displayed. The lamp, which has a blown arc, has a magazine feed for the positive carbons, burning them up quickly and automatically replacing them like bullets sliding into the firing chamber from the

(Continued on page 28)

SMPTE Reports on Theatre Survey

HOTTEST ITEM on the agenda of the 74th semiannual convention of the Society of Motion Picture and Television Engineers was the report, presented by Ben Schlanger, on the Society's theatre survey. The report indicated that difficulty will be encountered if extremely wide screens are to be fitted into a great majority of American theatres.

In considering the figures given in the following article it must be remembered that there are over 16,000 theatres in the country and that the SMPTE study is based on less than 400 of these. In the opinion of IP, this is too small a sampling upon which to reach any really accurate conclusions.

Mr. Schlanger, chairman of the SMPTE's Theatre Engineering Committee, stressed two things in making his report, the small number of theaters included in the study and the fact that the Society was simply presenting the figures and was not drawing any conclusions.

The theatre survey report was compiled from statistics taken from returned questionnaires that were sent to theatre owners by the SMPTE last May. Replies were analysed by the Motion Picture Association of America. In compiling the report, Mr. Schlanger and the theatre engineering committee divided the theatres into three groups: Group I consisted of theatres with a seating capacity of 500 or less; Group II consisted of theatres with a seating capacity of 501 to 1,500; and Group III consisted of theatres with a seating capacity of over 1,500.

350 Theatres Checked

Of the 8,000 theatres where questionnaires were received, only 400 responded with the filled out form, and of these about 50 had to be discarded. The survey, therefore is based on approximately 350 theatres.

Among other things, each theatre owner was asked in the questionnaire to give maximum available screen height, maximum available screen width, and maximum viewing distance (the distance from the screen to the furthermost seat in the house).

From this information the committee compiled statistics which indicate that in theatres in Group I (up to 500 seats), the average maximum picture height available is 14 feet, 8 inches. In Group II (501 to 1,500 seats), the average available height is 19 feet, 2 inches. In Group III (over 1500 seats), it is 21 feet, 6 inches.

The information on available screen height, when considered together with the information on available picture width, provided the committee with figures for the average aspect ratio available at theatres in each group.

In Group I, the largest available aspect ratio ranged from 1.5 to 1 up to 1.87 to 1 for an average of 1.7 to 1. In Group II, it ranged from 1.81 to 1 up to 2.16 to 1 with an average of 1.9 to 1. In Group III, it ranged from 2.06 to 1 up to 2.30 to 1, for an average of 2.2 to 1. In presenting the report, Schlanger pointed out that these aspect ratios were based on the use of all available screen height. By using less than the available screen height. By using less than the available screen height, a theatre can obtain a large aspect ratio.

Of the theatres contacted in Group I (houses of 500 seats or less), 18% replied. In Group II (houses of 501 to 1500 seats), 46% responded. In Group III (over 1500 seats) 36% responded. According to Motion Picture Association of America statistics, 51.9% of all theatres in the United States are in Group I, 42.5% are in Group II, and 5.6% are in Group III.

The questionnaire asked theatre owners if they had already converted to wide-screen projection and whether they planned to do so this year, or if they have no intention of doing so.

In Group I, 3.6% said that they had

converted. In Group II, 6% had converted, and in Group III, the figure was 13.6%. The overall average of those already converted to wide-screen was 7.4%.

In Group I, 40% said they plan to convert to wide-screen this year. In Group II, 68% said the same, and in Group III, 59.3% will convert. Altogether, 59% of those responding said they were planning to convert to wide-screen this year.

In Group I, 56% said they do not plan to convert to wide-screen this year, while the figure for Group II was 26%, and for Group III it was 27%. A total of 33.5% of the theatres replied that they do not plan to convert to wide-screen this year.

Conversion to 3-D

Another question to theatre owners was whether or not they had already converted to 3-D and whether they planned to do so this year, or if they have no intention of doing so.

In Group I, 14.5% said they have already converted to 3-D. In Group II, the figure was 49%, and in Group III, 88% said they had already converted. According to the survey 51% of all theatres responding have already converted to 3-D.

In Group I, 11% of those responding said that they plan to convert to 3-D this year. In Group II the figure was 21.5%, and in Group III, 8.5% plan to do so. A total of 15.6% of the theatres said they are planning to convert to 3-D this year.

In Group I, 74.6% of the theatres said they have no intention of converting to 3-D this year; the same was true for 29.3% of the Group II responses; and in Group III, the figure was 3.4%. A total of 33.5% of the theatres said they do not plan to convert to 3-D this year.

Mr. Schlanger noted that a number of exhibitors who stated that they do not plan to convert to 3-D indicated that they were waiting for a single-projector system.

28 Receive Honors at SMPTE Session

Presentation of awards for technical achievements in the motion picture art was an important feature of the SMPTE's semiannual convention at the Statler Hotel in New York City. The Progress Medal Award was received by Fred Waller, of Cinerama, Inc., for his work in developing the Cinerama process.

The SMPTE Journal Award for a technical paper published by the society was made to R. L. Spottiswoode, N. L. Spottiswoode and Charles Smith for a paper titled "Basic Principles of the Three-Dimensional Film."

Honorable mention was given Willy Borberg for his paper on "Modulated Air Blast for Reducing Film Buckle;" to C. R. Carpenter and L. P. Greenhill for "A Scientific Approach to Informational-Instructional Film Production and Utilization;" to G. C. Higgins and L. A. Jones for "Nature and Evaluation of the Sharpness of Photographic Images;" and to Otto H. Schade for "Image Gradation, Graininess and Sharpness in Television and Motion Picture systems". Special mention was made of Norman Collins and T. C. MacNamara for "The Electronic Camera in Film-Making."

The Samuel L. Warner Memorial Award was presented to Dr. W. W. Wetzel, of the Minnesota Mining & Manufacturing Company who has been developing a more durable magnetic pickup for the new projection soundheads.

Fellowships in the society were awarded to Merle H. Chamberlin, supervisor of projection for M-G-M; LeRoy M. Dearing, Technicolor Motion Picture Corp.; Russell O. Drew, RCA Victor; Carlos H. Elmer, U. S. Navy; Frank N. Gillette, General Precision Laboratory.

Also to Gerald G. Graham, National Film Board of Canada; Sol Halprin, 20th Century-Fox; A. V. Loughren, Hazeltine Corp.; Ralph E. Lovell, National Broadcasting Co.; Arthur J. Miller, Republic Pictures Corp.; John W. Servies, National Theatre Supply; Kenneth Shaftan, J. A. Maurer, Inc.; R. J. Spottiswoode, Stereo Techniques, Ltd.; Charles L. Townsend, NBC, and T. G. Veal, Eastman Kodak Co.

ABSTRACTS OF PAPERS

Following are abstracts of some of the technical papers read at the SMPTE convention that are of special interest to those in the projection field:

PERFORMANCE OF HIGH-INTENSITY CARBONS IN THE BLOWN ARC

C. E. GREIDER
National Carbon Co., Cleveland

The performance of carbons operated in the Gretener-type of blown arc shows the following advantages as compared with the more usual method of burning: (a) from 5 to 20% less current is required to produce the same light; (b) at the higher brightness levels, less carbon consumption is required for the same light; (c) the maximum light that the carbon will deliver is increased by 10 to 20%; and (d) uniformity of brightness across the face of the arc crater is considerably improved.

The performance advantages of the blown arc seem to be considerably greater for 12-mm than for 10-mm carbons, and are greatest when the carbon is operated at or near its maximum current and light output. The addition of blowing to the arc introduces special problems regarding the design and operation of the negative electrode.

FERRITE-CORE HEADS FOR MAGNETIC RECORDING

R. J. YOUNGQUIST and W. W. WETZEL
Minnesota Mining and Mfg. Co.

The low abrasion resistance of high permeability nickel iron alloys has been recognized as one limitation to their use as core material in magnetic recording heads. Ferrites have been considered as possible abrasion-resistance substitutes for the soft alloys. However, the brittleness of this ceramic has been considered as a limitation to the formation of fine, well-defined head gaps. It will be shown that effective gaps of 0.0005 in. or less may be obtained and that such heads are definitely suitable for motion-picture applications.

NEW 35-MM TELEVISION FILM SCANNER

EARNEST H. TRAUB
Philco Corp., Philadelphia

The paper discusses the background against which this development was undertaken in terms over presently existing equipment. The film transmission problem for both black-and-white and color is then restated in fresh terms. This in turn points to a philosophically new set of solutions involving a combination of known and new elements. They comprise (1) nonstorage flying-spot scanning technique, (2) continuous exposure, and (3) continuous film motion combined with optical compensation.

Of these elements, the optical compensator proves to be the key to the whole problem. A new form of optical compensator is then discussed which is both small and simple and which in turn provides the possibility of new and elegant solutions for film-shrinkage correction and iso-film-transport. The new optical compensator is corrected for various aberrations and has good optical efficiency. A color television film scanner incorporating these features is described.

NEW PORTABLE 16-MM ARC PROJECTOR ADAPTED FOR 3-D PROJECTION

A. J. CARDILE and J. J. HOEHN
RCA Victor Div., Camden, N. J.

A new portable arc projector for 16-mm film, consisting of five luggage-type units and its modification for 3-D is described.

BASIC PRINCIPLES OF STEREOPHONIC SOUND

W. B. SNOW
Acoustics Consultant, Los Angeles

Stereophonic sound has suddenly become of vital importance to industry. The subject has been studied for many years, but the published material is scattered. This paper summarizes the fundamental theory under-

(Continued on page 24)

● **Manna and Sour Grapes**

CinemaScope Wrecks Records

By JAMES MORRIS

THE HEADLINE of the lead article in September's *International Projectionist* asked the question: "Does CinemaScope have the answer?" Since that time, "The Robe", photographed in the 20th Century-Fox anamorphic-lens CinemaScope system has opened with tremendous ballyhoo at the Roxy in New York, Grauman's Chinese in Hollywood and in many other large-city theatres. Newspaper critics have been enthusiastic, the public has responded in droves, and record-breaking grosses have been taken in wherever the picture has played.

However, it is still too early to tell just how important CinemaScope and similar systems such as WarnerScope will be in the future of motion pictures. Only the public can give a final verdict, and that will come only after several pictures are made in CinemaScope — when it can no longer attract on the basis of being new or unusual.

To put it bluntly, as rival Hollywood producers have done, there is no doubt that 20th Century-Fox hit on an unusually successful combination of theme and presentation in this first film, but there is still the difficult task of producing equally successful subsequent releases. There is also some speculation within the industry as to whether the public is going for "The Robe," the CinemaScope system, or the tremendous Fox publicity campaign.

"Sour Grapes"

It is highly possible, as Fox claims, that "sour grapes" have something to do with the above reactions. "The Robe" is making a lot of money and it has been praised unanimously wherever shown. However, no new system can be perfect from the start and improvements are often the result of sound criticism. That is why this article at first glance may seem to take a negative rather than a positive view of the new system.

A cautious but constructive attitude was taken by Bosley Crowther, film critic of the *New York Times*, when he described CinemaScope as follows:

"It is essentially a sweeping display of colorful settings and costuming on a unique pictorial scale. Rome in its days of mighty empire, Jerusalem in its early Christian years and the Holy Land in its ageless dusty primitiveness have never loomed larger on the screen. Neither have human faces been more frankly or closely surveyed than in the magnifications that go by the name of close-ups in this film."

"Plainly," Mr. Crowther continued, "the size of this canvas invites panoramic artistry, and it is obvious that some marvelous outdoor pictures may be made for projection on it. 'Ivanhoe,' for instance, or a first-class western film, such as 'Stagecoach' or 'Fort Apache,' would be tremendous on this screen. Conversely, it is apparent that intimate personal drama may be lost in such insistent and inflexible large-framing."

In a talk with IP shortly after his article appeared, Mr. Crowther went further in expressing his feelings about CinemaScope and other methods of projection on an extremely wide screen. Because he is perhaps the nation's foremost film critic and in an excellent position to judge new motion picture techniques independently and without prejudice for their entertainment value, his opinions are important.

"I don't like to see motion pictures tied to any particular size or aspect ratio," he stated, adding that he understood that theatre architects had been advocating a flexible screen for years.

Mr. Crowther's ideas concerning the flexible screen may well be the soundest approach to the problem of getting more people back into theatres and re-establishing the movie habit. The public has shown that it likes variety. It flocked to 3-D pictures for a long time despite inferior productions, it is interested in stereophonic sound, and it is now flocking to see "The Robe" in CinemaScope. A theatre equipped to show CinemaScope or the similar WarnerScope system, to show interesting and intimate films in the old-fashioned standard way, and to show stereo 3-D also, may well be a theatre that will not only survive but prosper in the future. Stereophonic sound is another important drawing card.

According to trade paper reports from the West Coast, the feeling of many Hollywood production executives is much the same. A question frequently asked out there is: "What would happen if all theatres were converted to CinemaScope?" According to a report in *Variety*, the answer depends on the impression that the giant "Robe" boxoffice take has made on the person queried. Some believe that CinemaScope should be applied only to a few spectacle types of film. Others believe that it is good for any kind of story.

A third group is inclined to believe that a complete switch to CinemaScope would have tragic results. "In a year or so we would be right back where we started from," one executive complained. "Every house would advertise huge wide screens and the public would be bored by it all. You can't save the industry with a gadget. It's good films that are needed. Nothing else."

Larger Aperture

For the projectionist, who has to cope with the problem of getting enough light on the screen to illuminate the large, wide picture required by CinemaScope, the system has one very important and helpful feature that has not been sufficiently publicized. This is the fact that the projection aperture for CinemaScope film is considerably larger than the conventional 3 by 4 aperture plate. The spreading action of the cylindrical segments of the anamorphic lens makes possible the use of a larger and more nearly square aperture plate despite the great width of the resulting picture on the screen.

For instance, compare the CinemaScope aperture plate to the plate required to obtain a wide-screen picture of 2 to 1 dimensions by means of a shorter focal-length lens. Dimensions of the CinemaScope aperture are 0.912 inches x 0.715 inches, giving a total area of 0.652 inches. The dimensions of a masked aperture plate to give 2 to 1 proportions to a conventional film would be 0.825 inches x 0.412 inches, giving a total area of 0.340 inches, just a little more than half of the CinemaScope aperture, and

(Continued on page 31)

Lens Chart for Wide Screens

By M. D. O'BRIEN
Director of Projection and Sound for Loew's Inc.

THE rush to install wide-screen projection systems in theatres around the country often has resulted in confusion over the type and size of the equipment required.

This office constantly receives queries such as the following: What focal-length lens is needed to get, for example, a 40-foot picture in a theatre where the throw is 125 feet and the proscenium arch is 20 feet high. The catch here is that with a 40-foot wide picture in such a theatre, all pictures would have to be shown in an aspect ratio of at least 2 to 1. Therefore a compromise must be made.

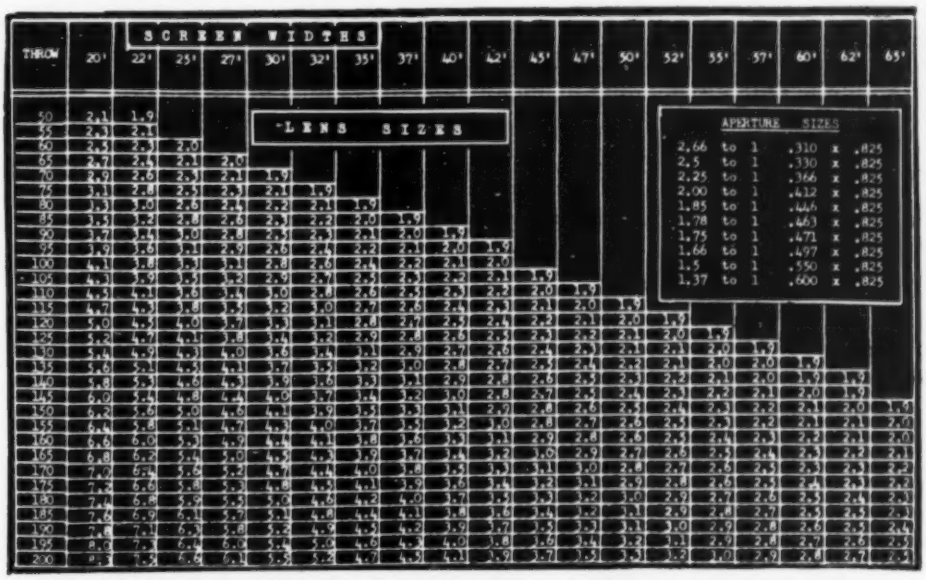
To answer questions of this kind quickly and, at the same time, accurately, I prepared the chart shown on this page. It may be interesting to projectionists who are helping to set up wide-screen systems.

The chart is divided into two parts. Let us consider the upper half first. If, for instance, a projectionist wants to know what focal-length lens would be required to obtain a picture 40-feet wide in his theatre if the throw is 125 feet, he can find out by reading down the left-hand column to 125 feet and then reading across to the column listing lenses for a 40-foot screen.

There he will find that a 2.6-inch lens would be needed to get exactly this size picture in this particular situation. However, since projection lenses are generally available only in quarter-inch sizes, exactly this size picture cannot be obtained. It would be necessary to compromise on a slightly larger picture using a 2.5-inch lens or a slightly smaller picture using a 2.75-inch lens.

The bottom section of the chart determines the height of a picture of a specified width when various aspect ratios are used. It is useful in coping with situations such as the following: As I mentioned above, a picture 40-feet wide in a theatre where the proscenium arch is only about 20 feet high, would result in a situation where all pictures would have to be shown in an aspect ratio of at least 2 to 1, and few pictures are now available that can be masked that much at the aperture without cutting off action.

In the upper right-hand corner of the top chart is a box listing the aperture sizes required to project various aspect ratios. Extreme ratios such as 2.66 to 1 or 2.5 to 1 are included although at present they probably are not feasible. The light loss and, of course, the fact that large sections of the picture would be cut off would make such projection impractical. Height-to-width ratios as extreme as this are obtained in the CinemaScope process through using a full aperture and an anamorphic lens.



THROW	SCREEN WIDTHS																	
	20'	22'	25'	27'	30'	32'	35'	37'	40'	42'	45'	47'	50'	52'	55'	57'	60'	62'	65'
50	2.1	1.9																	
55	2.3	2.1																	
60	2.5	2.3	2.0																
65	2.7	2.5	2.1	2.0															
70	2.9	2.6	2.4	2.2	1.9														
75	3.0	2.8	2.5	2.4	2.1	1.9													
80	3.2	3.0	2.7	2.5	2.2	2.0	1.9												
85	3.4	3.2	2.8	2.6	2.4	2.2	2.0	1.9											
90	3.7	3.4	3.0	2.8	2.5	2.3	2.1	2.0	1.9										
95	3.9	3.6	3.1	2.9	2.6	2.4	2.2	2.1	2.0	1.9									
100	4.1	3.8	3.3	3.1	2.8	2.6	2.4	2.2	2.1	2.0									
105	4.3	3.9	3.5	3.2	2.9	2.7	2.5	2.4	2.2	2.1	1.9								
110	4.5	4.1	3.6	3.4	3.0	2.8	2.6	2.5	2.3	2.2	2.0	1.9							
115	4.7	4.3	3.8	3.5	3.2	3.0	2.8	2.6	2.4	2.3	2.1	2.0	1.9						
120	5.0	4.5	4.0	3.7	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.9					
125	5.2	4.7	4.1	3.8	3.4	3.2	2.9	2.8	2.6	2.5	2.3	2.2	2.1	2.0	1.9				
130	5.4	4.9	4.3	4.0	3.6	3.4	3.1	2.9	2.7	2.6	2.4	2.3	2.2	2.1	2.0	1.9			
135	5.6	5.1	4.5	4.1	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.4	2.3	2.2	2.1	2.0	1.9		
140	5.8	5.3	4.6	4.3	3.9	3.6	3.3	3.1	2.9	2.8	2.6	2.5	2.4	2.3	2.2	2.1	2.0	1.9	
145	6.0	5.4	4.8	4.4	4.0	3.7	3.4	3.2	3.0	2.8	2.7	2.6	2.4	2.3	2.2	2.1	2.0	1.9	
150	6.2	5.6	5.0	4.6	4.1	3.8	3.5	3.3	3.1	2.9	2.8	2.6	2.5	2.4	2.3	2.2	2.1	2.0	1.9
155	6.4	5.8	5.1	4.7	4.3	4.0	3.7	3.5	3.2	3.0	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0
160	6.6	6.0	5.3	4.9	4.4	4.1	3.8	3.6	3.3	3.1	2.9	2.8	2.7	2.6	2.4	2.3	2.2	2.1	2.0
165	6.8	6.2	5.4	5.0	4.5	4.2	3.9	3.7	3.4	3.2	3.0	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.1
170	7.0	6.4	5.6	5.2	4.7	4.4	4.0	3.8	3.5	3.3	3.1	3.0	2.8	2.7	2.6	2.5	2.3	2.3	2.2
175	7.2	6.6	5.8	5.3	4.8	4.5	4.1	3.9	3.6	3.4	3.2	3.1	2.9	2.8	2.6	2.5	2.4	2.3	2.2
180	7.4	6.8	6.0	5.5	5.0	4.6	4.2	4.0	3.7	3.5	3.3	3.2	3.0	2.9	2.7	2.6	2.5	2.4	2.3
185	7.6	6.9	6.1	5.7	5.1	4.8	4.4	4.1	3.8	3.6	3.4	3.2	3.1	2.9	2.8	2.7	2.6	2.5	2.4
190	7.8	7.1	6.3	5.8	5.2	4.9	4.5	4.2	3.9	3.7	3.5	3.3	3.1	3.0	2.9	2.8	2.6	2.5	2.4
195	8.0	7.3	6.4	6.0	5.4	5.0	4.6	4.3	4.0	3.8	3.6	3.4	3.2	3.1	2.9	2.8	2.7	2.6	2.5
200	8.2	7.5	6.6	6.1	5.5	5.2	4.7	4.4	4.1	3.9	3.7	3.5	3.3	3.2	3.0	2.9	2.8	2.7	2.6

LENS SIZES

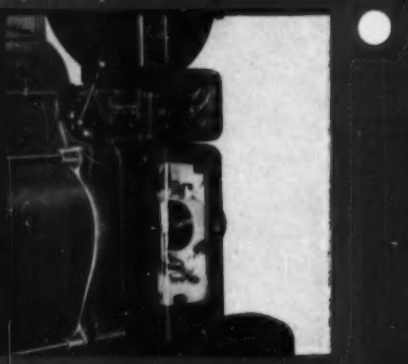
APERTURE SIZES

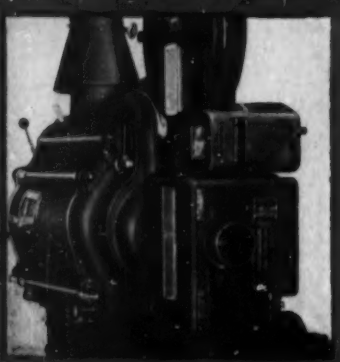
2.66	to 1	.310	x .825
2.5	to 1	.330	x .825
2.25	to 1	.366	x .825
2.00	to 1	.412	x .825
1.85	to 1	.446	x .825
1.78	to 1	.463	x .825
1.75	to 1	.471	x .825
1.66	to 1	.497	x .825
1.5	to 1	.550	x .825
1.37	to 1	.600	x .825

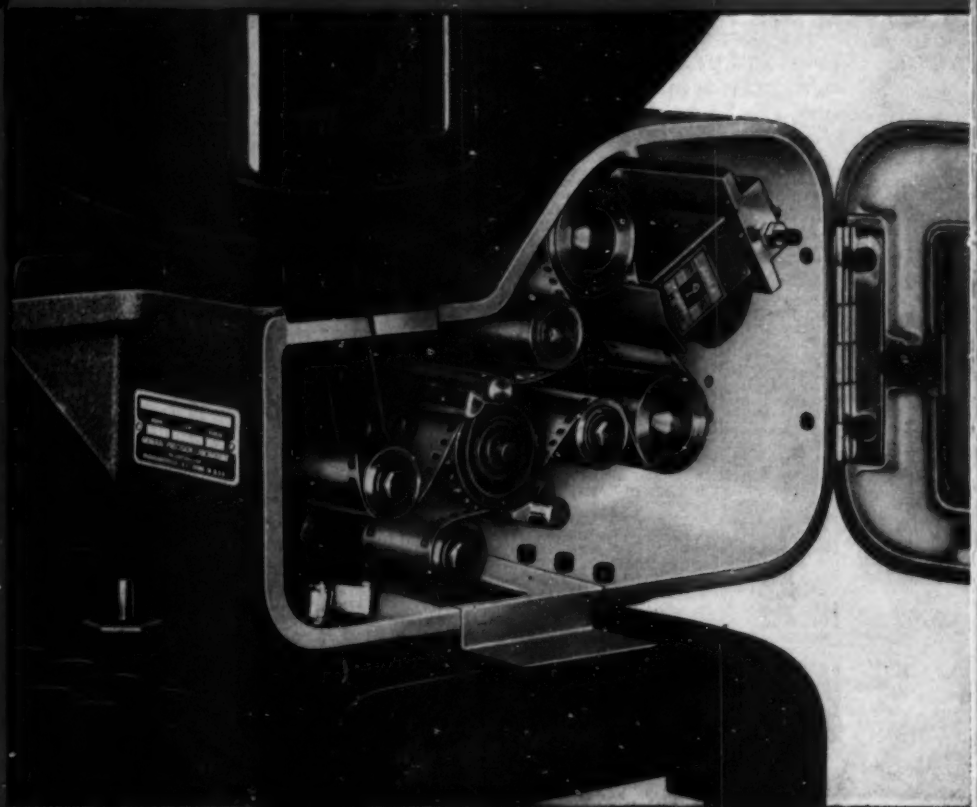
The two sections of this chart help in determining how well a theatre can be adapted to wide-screen projection and also aid in determining the size of the shorter focal-length lens required. The upper section shows the size of the lens needed to obtain a screen of any desired width at any projection throw. The section below indicates the height to 1/10th of a foot of the screen in relation to its width and the aspect ratio. Figures shown below on top of each column stand for aspect ratios.

Width	1.50	1.66	1.75	1.78	1.85	2.00	2.25	2.50	2.66	STANDARD
20	13.3	12	11.4	11.2	10.8	10.0	8.9	8.0	7.5	14.5
22	14.6	13.2	12.6	12.4	11.9	11.0	9.8	8.8	8.3	16.0
25	16.6	15.	14.3	14.0	13.5	12.5	11.1	10.0	9.4	18.1
27	18.0	16.2	15.4	15.2	14.6	13.5	12.0	10.8	10.1	19.6
30	20.0	18.	17.1	16.9	15.2	15.0	13.3	12.0	11.3	21.8
32	21.3	19.2	18.3	18.0	17.3	16.0	14.2	12.8	12.0	23.2
35	23.3	21.	20.0	19.7	18.9	17.5	15.6	14.0	13.2	25.4
37	24.6	22.2	21.1	20.8	20.0	18.5	16.4	14.8	13.9	26.9
40	26.6	24.	22.8	22.5	21.6	20.0	17.8	16.0	15.0	29.0
42	28.0	25.3	24.0	23.6	22.7	21.0	18.7	16.8	15.7	30.6
45	30.0	27.1	25.7	25.3	24.3	22.5	20.0	18.0	16.9	32.6
47	31.3	28.3	26.9	26.4	25.4	23.5	20.9	18.8	17.7	34.0
50	33.3	30.	28.6	28.1	27.0	25.0	22.2	20.0	18.8	36.1
52	34.6	31.3	29.7	29.2	28.1	26.0	23.1	20.8	19.5	37.8
55	36.6	33.1	31.4	30.9	29.7	27.5	24.4	22.0	20.8	40.0
57	38.0	34.3	32.6	32.0	30.8	28.5	25.3	22.8	21.4	41.4
60	40.0	36.1	34.2	33.7	32.4	30.0	26.7	24.0	22.6	43.6
62	41.3	37.3	35.4	34.8	33.5	31.0	27.6	24.8	23.3	45.0
65	43.3	39.1	37.1	36.5	35.1	32.5	28.9	26.0	24.4	47.2

ANY WAY YOU LOOK AT IT...







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For the World Premiere of Twentieth-Century Fox's "THE ROBE" at the ROXY, New York, Grauman's CHINESE, Hollywood and in key cities throughout the country!

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General Precision Lab and International Projector Corporation have worked together to bring you the finest four-track, single-film soundhead yet developed for the reproduction of multi-dimensional sound.

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IN THE
SPOTLIGHT

NEW five-year contracts recently signed between Chicago Local 110 and exhibitors in the Chicago area provide for progressive yearly increases in the exhibitors' contributions to the Union's Welfare Fund. For the first year of this pact, which became effective September 1, 1953, the exhibitors are required to pay into the fund the equivalent of an 18% wage increase, per man; the equivalent of a 22% wage increase, per man, for the second year; 26% for the third year; 30% for the fourth, and 30% for the fifth years. For example, for each man earning a *gross* salary of $125 per week, the exhibitor's contribution to the Fund will amount to $22.50 per week for the first year; $27.50 per week for the second year; $32.50 per week for the third year; and $37.50 per week for the fourth and fifth years.

Other benefits covered in the new contracts call for the elimination of midnight shows in a number of theatres at no reduction in pay, and double-time when pictures are shown after 12 o'clock midnight.

Chicago Local 110 blazed the trail back in 1948 with the first labor-management participation welfare fund in theatrical history. It was the forerunner of similar agreements now in force in a number of IA Locals. The fund is administered by an equal number of representatives of Local 110 and the exhibitors. Eugene Atkinson, business representative, and Clarence Jalas, secretary, headed the committee representing the union at the negotiations.

• Los Angeles has been selected as the AFL convention city for 1954, and Chicago for 1955. These cities were selected by the delegates to the recent 72nd annual AFL convention in St. Louis.

• The untiring efforts of Hugh J. Sedgwick, IA 8th vice-president and member of Local 303, Hamilton, Ont., were rewarded last month when the Canadian Labour Relations Board certified the IA as bargaining agent for the Tv technicians of the Canadian Broadcasting Company.

• Carl G. Cooper, IA 5th vice-president, was unanimously elected president of the Hollywood AFL Film Council, succeeding Roy Brewer who resigned last month.

• Rounding out 48 years of service to the motion picture industry, Joe Cifre, member of Boston Local 182 and head of Joe Cifre, Inc., well known theatre equipment supply house, is retiring from all business activities and, with his wife, plans to take an extended vacation. Feeling physically fit and having the wherewithall, Joe feels that the time has come when he can sit back a bit and take things easy. More power to him, we say, and we hope that both Joe and Marian Cifre find the enjoyment in their leisure that they are looking for.

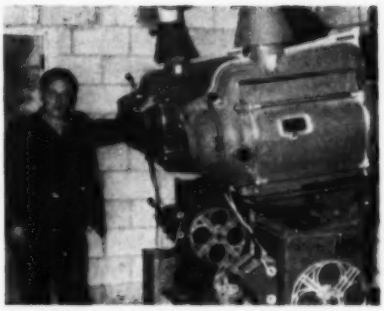
Joe Cifre's career began back in 1905 when as a lad of 14 he worked in his father's nickel movie show in Boston. He later worked in a number of the theatres in and around Boston and in 1911 he joined Local 182. Later he started on a series of road shows which kept him occupied for several years. In 1917 he was made chief projectionist at the old Castle Square Theatre in Boston and there he installed and managed the first de luxe projection room in New England. That same year he was elected president of Local 192. Tiring of work in the projection room, Joe entered the theatre equipment field and in 1935 he organized his own independent company, Joe Cifre, Inc.

The famous "Jimmy Fund" of the Children's Cancer Foundation is Joe's brain child. Since its inception in 1948, this fund has raised and spent about $2.5 million in research and treatment of cancer in children. Under the auspices of the Variety Club, of which he is an active member, he has put on an average of 40 free 16-mm movie shows per month for the past 15 years for shut-ins in charitable institutions. After a much needed rest Joe plans to continue with his various philanthropic works.

• Local 604, Corpus Christi, Texas observed its 30th anniversary last month.

• Harry S. Spang, member of Local 398, Meadville, Penna., recently celebrated his 45th year as a projectionist. He started his projection career back in 1908 when at the age of 16 he ran pictures at the Baldof Theatre in Pittsburgh. Several years later he moved on to Keystone, W. Va., and then to Uniontown, Penna., where he became

Representing the AFL at the recent Labor Day celebration held at Morgantown, W. Va., IA Representative Lawrence J. Katz (center) is here shown with a group of Local 578 officials. Left to right: August Defrere, vice-president; Mose Gottlieb, former business representative; Katz, H. D. Kelly, secretary, and Richard Herstine, business representative.



Harry Spang, member of Local 398, Meadville, Penna., in the projection room of the Lake-Side Drive-In Theatre where he has been employed for the past four years.

a member of Uniontown Local 208. In 1914 he transferred back to Pittsburgh Local 171 and for the next 22 years he worked in several of the larger houses there. For the past four years Spang has been employed at the Lake-Side Drive-In Theatre, near Conneaut Lake, which is in the jurisdiction of the Meadville Local. For a number of years he was associated with National Theatre Supply as installation supervisor.

In addition to his work as projectionist Spang operates a successful washing machine and vacuum cleaner repair shop in Meadville.

• In tribute to the memory of the late Thomas J. Shea, assistant IA president, engraved resolutions were presented to his widow and to Local 375, Middletown, Conn., of which he was a member. The presentations were made by Harland Holmden, who succeeded Shea, and William C. Scanlon, IA trustee.

• The 50th anniversary of Local 108, Geneva, N. Y., celebrated jointly on October 5th with the New York State Association of Motion Picture Projectionists which was marking its own Silver Jubilee, was a wing ding of an affair. Held at the beautiful headquarters of Winnek Post, American Legion, on the shores of Lake Geneva, the dual celebrations included a midnight steak dinner. The editor of IP was on hand and spoke briefly about some of the new developments now rocking the film industry.

During the dinner Local 108 presented a Gold Life Membership card to Jerry Fowler, member of the Local and now manager of the Schine Theatres. Ed Dougherty, Local 384, Hudson County, N. J., received a pen and pencil set for his efforts on behalf of Local 108's *Journal*. Morris I. Klapholz, of New York, secretary of the 25-30 Club, and Ed Dougherty obligated Charles F. Wheeler, secretary-treasurer of Local 108, into the club. During the afternoon business session, with Earl Tuttle, Local 396, Binghampton, in the chair, a resolution was passed congratulating Adolph Zukor on his 50 years in the motion picture business.

• Theo. P. Hover, member of Local 349, Lima, Ohio, is very anxious to secure the following items which he believes may be found in some theatre junk pile: a variable transformer (G. E., Argus) of the type frequently used with a 900 watt, 30 V., 30 amp incandescent lamp — a projection lamp which used to be common in small theatres. He would like one that will operate with a line voltage of 220 volts, single-phase. Although there seems to be a large supply of the 110 V. units, Hover claims that the 220 V. type is scarce. He is also building a portable stage switchboard and would like to contact some of the theatres that are about to be shuttered for dinners, stage pickets, plugging boxes, spotlights, etc. Contact Hover direct in care of 410 Marian Avenue, Lima, Ohio, for further particulars.

• Charles Seifert, financial-secretary for Local 203, Easton, Penna., is chairman of the Easton Central Labor Union's Educational Committee, a post he has held for the past 20 years. For the past four years he has served as

Shown above is one of the outstanding floats taking part in the recent Labor Day celebration at Morgantown, W. Va. This float was conceived and built by members of IA Local 578.

secretary for the CLU in addition to acting as its labor representative on the Housing Authority. He receives no remuneration for these services except the satisfaction of serving his community.

Out-of-Town Visitors to IP.

• Michael (Mike) Ostrowsky, vice-president of Buffalo Local 233, visited New York for several days for the express purpose of seeing Cinerama and the CinemaScope picture, "The Robe." He said he was particularly impressed with CinemaScope and he considers it a boon to the motion picture industry.

Ostrowsky has been working in the projection room of the Lafayette Theatre for many years, and until several years ago he doubled as the Na-

(Continued on page 32)

Morris Klapholz (left), member of New York Local 306 and secretary of the 25-30 Club, presents a Club membership certificate to Charles F. Wheeler, secretary of Local 108, Geneva, N. Y., and of the New York State Projectionists Association. Edward Dougherty, past president of the 25-30 Club, is shown at the extreme right. The presentation took place at the recent joint celebration of the Geneva Local's 50th and the Association's 25th anniversaries.

Technical Puzzlers Clarified

By HENRY KOGEL

Staff Engineer, SMPTE

IF LAST YEAR, people booted around terms like peripheral vision, convergence, divergence, stereopair, anamorphic, stereophonic, etc., we would suspect they were going highbrow on us. Today, these are more or less common terms in the trade. Very often it is assumed that these terms are well understood by all and are therefore too frequently used without adequate explanation.

With this thought in mind, your editor leafed through some of the back issues of IP and came up with a varied assortment of words which he thought you might like to find defined, all in one place, and then suggested I work them over once, lightly.

Before proceeding, I would like to make it very clear that I'm opposed to dictionary-type definitions, which are so brief and concise, they are likely to leave you in the same confused state of mind. I am therefore going to attempt to explain meanings rather than offer strict definitions.

ANAMORPHIC. This is a special optical attachment which when added to a camera produces a compressed image which appears as though it were photographed with a very wide angle lens in the horizontal direction and an ordinary lens in the vertical. A similar attachment, added to the projector, expands the horizontal (again like a very wide angle lens), maintains the vertical and thus produces the panorama effect of CinemaScope. (This was fully described in the June 1953 IP as the Hypergonar Lens Process.) It is obvious that the functioning of this attachment is critically dependent on its proper alignment so that the compression and expansion take place in the horizontal plane and no other.

BEAM SPLITTER. This is an optical device employed in certain suggested 3-D single film systems. When used on a camera lens it enables a single camera to photograph the two separate stereoscopic images side by side on a single film. The same device is then used on a projector to project the two images. It works just the way the name implies; by use of 2 pairs of mirrors or prisms it splits the light beams directed on the camera or projector lenses. One of the main reasons why the system is not used commercially is because of the excessive light loss involved.

PERIPHERAL VISION. This is another term for side vision — or the amount one sees to each side when looking straight ahead. For most people this is somewhere around 170° or almost a semi-circle. The trend towards wider screens is therefore in the direction of more natural viewing in that it makes for greater use of peripheral vision than here.ofore.

BINOCULAR VISION. Normal vision through two eyes which enables the observer to see depth in a scene by fusing the separate left and right eye images in the visual centers of the brain.

STEREOSCOPIC PAIR. The two pictures, taken from different points of view on the horizontal axes, that make up the left and right eye views of a 3-D picture. The stereopair becomes a stereoscopic picture when the viewed end product appears to be an approximation of binocular vision of the original scene.

STEREOPHONIC SOUND. A sound system which records and reproduces sound with three characteristics not existing previously — location, movement, depth. In the theater, the sound must appear to come from the apparent sound

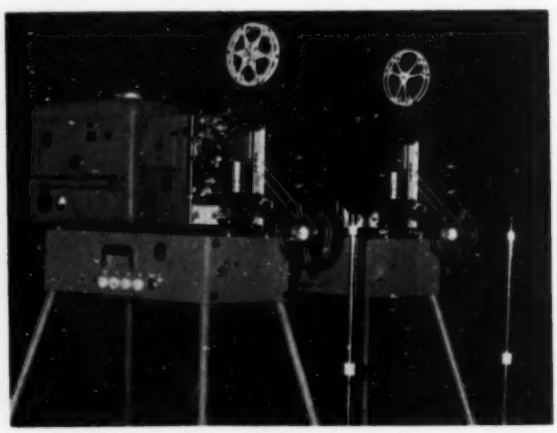
RCA Develops 16-mm Projector for 3-D

PORTABLE 16-mm arc projection equipment designed to use three-dimensional motion pictures for business and industry was demonstrated at the recent SMPTE meeting by RCA's Engineering Products Department. This new equipment brings to non-theatrical users the special advantages of three-dimensional films, with the same impact and life-like realism of depth and color characteristic of Hollywood productions, a company spokesman said. Documentary and industrial motion pictures filmed in 3-D are expected to provide American industry and educational institutions with a new and effective means of visually presenting its public relations, sales or training programs.

The new RCA equipment reproduces standard 16-mm sound tracks, both photographic and magnetic. It is adaptable for the reproduction of binaural or stereophonic sound recordings if desired. These improved sound recording techniques give to the reproduced sound the same greatly enhanced naturalness and realism that 3-D pictures present to the eye.

The new 3-D system consists of two RCA 16-mm portable arc projectors, with selsyn interlocked motors for perfect timing of the two images which must be projected simultaneously to give the illusion of depth. Polarized glasses are used by the audience — just as in 3-D entertainment films. Special silver-surfaced screens are required for the showing of 3-D films because conventional flat white screens depolarize the light from the projectors and hence destroy the depth effects.

RCA claims that this portable 16-mm motion picture projector, using arc lighting, provides from two to four times the illumination of the next best light source. It has its own sound amplifiers, but the equipment can be connected to almost any type of existing stage or auditorium loudspeaker equipment.



Designed to bring the advantages of 3-D to users of educational, documentary and commercial films, this new portable 16-mm equipment is now on the market through RCA Victor. While the equipment has its own sound amplifiers, it may be hooked up with almost any stage or auditorium loudspeakers.

source, move with the action and sound near or far in accordance with the apparent depth of the image. At the present time, this is achieved by using 3 microphones and 3 separate channels in the recording process and similarly 3 amplifiers and loudspeakers in reproducing the sound in the theater. The loudspeakers are placed one on each edge of the screen and one in the center. An additional track is often made providing special effects for the auditorium surround speakers. The recording and reproducing medium is now magnetic replacing the single photographic track. The first stereophonic sound was recorded magnetically on a separate film and was reproduced by an independent magnetic reproducer synchronized with the projector. Future stereophonic films will probably follow the pattern of "The Robe" where the four sound tracks and the picture are on the same film and a four-track sound reproducer is added between the upper film magazine and the main projector mechanism. By virtue of its position, the new sound mechanism was quickly tagged "penthouse reproducer".

Next issue IP will print more of Mr. Kogel's explanations of the new words and terms now puzzling lots of people in the industry. If something puzzles you, drop us a line and we'll pass your puzzler on to Mr. Kogel.

PERSONAL NOTES

A. F. BALDWIN, vice president and export manager of National Theatre Supply, has begun an extensive trip through Brazil,

A. F. BALDWIN, export manager, National Theatre Supply Co.

Colombia, Venezuela, Mexico and the West Indies to confer with exhibitors on the installation of CinemaScope and wide-screen equipment sold in Latin America by Simplex distributors. Before leaving, Mr. Baldwin said that 18 CinemaScope installations have been sold in Mexico.

L. HAYWARD BARTLETT, director of advertising for Eastman Kodak Co., has retired after 40 years service with the company. Well known in motion picture circles, Bartlett, who will continue with Kodak as a consultant, was one of the early winners of the coveted $1,000 Harvard Award for top advertising copy.

Clear Crisp Pictures with

SUPER SNAPLITE PROJECTION LENSES

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Booth 95—Chicago
Oct. 31 - Nov. 5

Your patrons will notice the difference! Super Snaplites give you Sharper Pictures, More Illumination, Greater Contrast and Definition.

For the Best in Projection use Super Snaplites . . . the only Projection Lenses to give you a true speed of f/1.9 in every focal length up to 7 inches.

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"YOU GET MORE LIGHT WITH SUPER SNAPLITE"

ABSTRACTS OF PAPERS

(Continued from page 15)

lying stereophonic sound insofar as it has been published, and gives examples of how the theory is employed in representative practical situations. Fundamental differences between ordinary binaural listening and stereophony are pointed out, as well as similarities. It is shown that much qualitative but little quantitative information has been reported. Factors which aid some stereophonic effects are shown to be detrimental to others, and methods of minimizing the undesirable conditions are suggested.

STEREOSCOPIC PERCEPTIONS OF SIZE, SHAPE, DISTANCE AND DIRECTION

D. L. MacADAM
Eastman Kodak Co., Rochester, N. Y.

Most of the distortions perceived in stereoscopic pictures are caused by false perspective. False perspective cannot be corrected by variation of the camera interaxial separation. Parallax movements, which result from head movements in ordinary experience, are lacking in stereoscopic pictures, and are replaced by perverse twists of the scene. The failure of some observers to be impressed by depth in stereoscopic pictures is probably caused by absence of parallax movements, from which some people normally get more sense of depth than from binocular disparities.

AN AUXILIARY MULTITRACK MAGNETIC SOUND REPRODUCER

C. C. DAVIS and H. A. MANLEY
Westrex Corp., Hollywood, Calif.

A four-track magnetic soundhead for reproducing CinemaScope films in theaters is described. The unit mounts readily between projector and upper film magazine and is film driven. To facilitate threading, the film sprocket is locked when the pressure pads are opened. A low natural-period, Davis filtered drive insures high-quality film motion.

CINEMASCOPE OPTICS

JOHN D. HAYES
Bausch & Lomb Optical Co., Rochester, N. Y.

The CinemaScope system for the presentation of motion pictures in existent theatres has resulted from major technological advances along two facets of engineering: optics and sound reproduction. The optical aspect has given rise to the wide-screen picture. The sound reproduction aspect has yielded stereophonic sound.

In the consideration of the subject the optics shall be considered the dominant factor although the sound, the screen, the film and the projection equipment are to be reviewed.

AN IMPROVED CARBON-ARC LIGHT SOURCE FOR 3-DIMENSIONAL AND WIDE-SCREEN PROJECTION

DR. EDGAR GRETENER
Zurich, Switzerland

Three-dimensional and wide-screen projection both require substantially more than the conventional amount of screen light. The Super Ventarc has been designed to meet these requirements to such an extent that the screen lumens are only limited by the maximum density of radiant energy the film can take. If this value is set at 0.7 w/sq mm, the ultimate limit for a 35-mm projection system will be approximately 50,000 lm, with no film shutter.

AN INDUSTRIAL APPLICATION OF MAGNETIC-STRIPE SOUND TRACK

WILLIAM E. COWLES
General Elec. Co., Schenectady, N. Y.

The General Electric Guided Missiles Dept. has found an economical and useful application for magnetic-stripe sound tracks in the production of documentary industrial motion pictures. This experience indicates a potential users market.

A FAST-CYCLING INTERMITTENT FOR 16-MM FILM

WARREN R. ISON
RCA Victor Div., Camden, N. J.

A 16-mm mechanism designed to advance the film during the vertical blanking time of the television system and its use with a flying-spot film scanner for color television is described. The order of the forces encountered is indicated. Also, solutions to certain auxiliary problems are given as well as operating characteristics and performance data.

ESPECIALLY DESIGNED FOR PORTABILITY

NEW VICTOR 1600 ARC PROJECTOR

3-PART PORTIBILITY — Disassembles into three carrying units. Can be easily assembled and set up in less than five minutes.

BUILT-IN VOLTAGE SELECTOR — Enables you to easily and safely operate within voltage requirements of any particular area.

GREATER PICTURE BRILLIANCE — 1600 lumens on your screen give you clear, sharp pictures. One pair of carbons provides 57-minute show. Plus flawless tone clarity.

EASY SET-UP ON UNEVEN GROUND — Built-in floor levelers provide firm base for set-up on level or uneven ground.

ACCURATE PICTURE CENTERING — Easy lock tilt at either front or rear of machine assures positive centering at any picture throw angle. Trouble-free film safety.

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QUALITY MOTION PICTURE EQUIPMENT SINCE 1910

New Variable Focal Length Lens

By MERLE CHAMBERLIN

Projection Supervisor, M-G-M Studios, Culver City, Calif.

AN AUXILIARY LENS of variable focal length, which would enable a projectionist to exhibit pictures in a variety of wide-screen sizes by means of a simple adjustment on the calibrated barrel, was recently exhibited at a Motion Picture Research Council demonstration at the Village Theatre, Westwood, California.

Developed by an M-G-M projectionist, Charles Young, of Hollywood Local 165, several pilot models of the lens have been built by the Pacific Optical Co., of Los Angeles. Marketing of the lens, which screws on to the front of a standard half-size projection lens, replacing the lens tube extension, is expected shortly.

Attached to a 4-inch lens, it can magnify to the equivalent of a 2.2-inch lens; when used with a 5-inch lens, magnification is up to that of a 2.7-inch lens. An especially useful feature of the lens is that it can be stopped anywhere between the long and short focal length positions, enabling the projectionist to tailor the picture to the theatre and greatly simplifying the problem of screen masking.

This is the variable focal length auxiliary lens described in the accompanying article. It is screwed on to the Bausch and Lomb 5½" lens.

The second feature of the attachment is the elimination of certain inherent inefficiencies of extremely short focal length lenses, such as the difficulty of keeping foreign matter off the back element of a lens that is worked almost against the aperture, and definition troubles under short back focus conditions where even a slight buckle or breezing of the film exists.

Light transmission is 96.85 per cent, or a 3.15 per cent light loss.

This auxiliary lens is coated and consists of one stationary rear doublet and one movable front doublet. It is 11½ inches long and extends 10 inches from the front of the projector case, about 6½ inches further than does a normal lens. When used with a double-shutter projector, the front shutter is removed and the rear shutter cut to about 87 degrees.

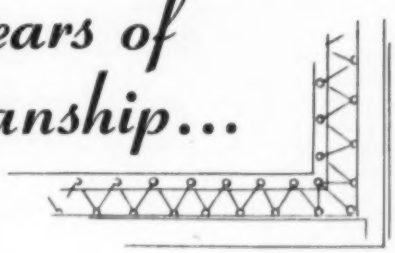
New Williams Screen

A solid plastic silver-finish screen, said to provide a high degree of reflectance and to be free from streaks and objectionable seams, has been developed by the Williams Screen Co. Although tough, the screen is reported to be permanently flexible. It has clean-cut perforations with no projecting fibers to impede sound or collect dirt.

The entire facilities of the Williams plant are now devoted to producing this screen which was designed for all the new wide-angle and 3-D processes. A brochure describing it may be obtained from the Williams Screen Co., 1675 Summit Lake Blvd., Akron 7, Ohio.

THE NEW RAYTONE SCREEN will change your mind about the screen you're going to buy!

30 years of Screenmanship...



RAYTONE SCREENS have been successfully designed for every type of projection since the "Silent Days" of 1923.

Our own scientific tests as well as those of reliable independent laboratories confirm a 3.5 to 1 brightness gain for our new screen when compared to a flat white screen. This we consider a minimum requirement for really good wide-screen performance.

THE NEW RAYTONE All-Purpose Stereo Screen was developed for every wide-screen system available today—Anamorphic, 3-D, standard 2-D or plain wide-angle projection systems.

New type invisible seams and a practically tear-proof surface make it the RIGHT screen for the CAREFUL buyer.

RAYTONE SCREEN CORP. 165 CLERMONT AVE. BROOKLYN 5, N. Y.

Pension Protection — Goal of Labor

The need for adequate pension protection is an important subject among IA men. This is the third in a series of articles reflecting the official views of the AFL.

BUREAU of Internal Revenue approval is required before workers and employers can enjoy the tax benefits possible under a permanent pension plan, as was stated in the previous installment of this series. If this approval be obtained, a worker does not have to pay any Federal income tax on the portion of his wages withheld as a contribution, and he is not required to pay a tax on this money after he retires unless the total amount then puts him in a taxable bracket.

The employer also benefits because the Bureau allows him to regard his pension contribution as part of the cost of doing business. He is permitted to deduct the full amount from his taxable income. However, a pension plan must meet certain requirements set forth in the Internal Revenue Code. The chief requirements are as follows:

Must Be Permanent

(1) The pension plan must be "permanent." It can be terminated only by reason of "business necessity" and then only after the advance approval of the Bureau of Internal Revenue has been secured. Otherwise heavy retroactive tax penalties may be incurred.

The Bureau of Internal Revenue has ruled that a pension plan which is part of a union-management agreement can be regarded as "permanent" within the meaning of this provision even though the agreement has a specific termination date—inasmuch as it is the intention of the parties to maintain the plan as a permanent feature.

(2) The plan must be established through a trust, contract or other legally binding arrangement.

(3) The pension fund must be for the exclusive benefit of the employees and their beneficiaries.

(4) Unless and until all liabilities under the plan have been satisfied, the principle or income of the pension trust cannot be diverted to purposes other than employee benefits. This rule operates to prevent the employer from receiving back any money paid into the trust, even if the payment is an overpayment.

However, he can get rebates in the form of "experience" credits which he can apply to reduce his future contributions or premium payments. In this way, overpayments or so-called "actuarial gains" may be taken out of the plan by the employer, as a reduction in his future costs, rather than left in to increase benefits to employees.

(5) The plan must cover either a certain minimum percentage of all employees, or a group of employees determined in such a way as not to discriminate in favor of officers, stockholders, supervisors, or highly-paid employees. The Bureau has two alternative rules for administering this provision—the so-called "Arbitrary" rule, and the "Discretionary" rule.

May Exclude Some

Under the Arbitrary rule the employer may exclude certain short-service and part-time employees. Out of the remainder, 70% must be eligible for coverage under the plan. Out of those eligible, at least 80% must actually join the plan in order for it to qualify.

Actually, few plans come in under this rule. Most of them qualify under the Discretionary provision, which permits the Commissioner of Internal Revenue to approve any classification of eligible employees if it does not discriminate in favor of employees who are officers, stockholders, supervisory employees, or high-paid employees. Under this rule, many plans which are limited to far less than the number required by the Arbitrary rule have been approved, including plans which covered as few as 10 percent of the employees.

No Discrimination

(6) The actual benefits specified under the plan must not discriminate in favor of employees who are officers, stockholders, supervisory personnel or highly-paid employees.

Once it has been decided that a pension plan will be inaugurated, it is time to consider which of the three alternative systems of budgeting and financing is best adapted to the particular situation. There is the "pay-as-you-go" approach, what is known as "terminal funding" and the "fully funded" plan.

These methods are by no means equally advantageous from the worker's point of view. Generally speaking the fully funded plan is best and the pay-as-you-go plan usually suspect. Next month's installment will discuss these matters.

[TO BE CONTINUED]

Warner Buys Zeiss Lenses

Anamorphic lenses for Warner's SuperScope wide-screen system will come, in part at least, from the Zeiss-Opton Works at Oberkochen, Germany, according to an announcement from Jack L. Warner.

SuperScope, a magnetic sound-on-film system, utilizes a screen aspect ratio of 2.66 to 1.

What's Your Problem?

If You've Got a Question, Send it in . . . IP Will Try To Answer it — and Pay You Too!

WHAT'S your problem? IP is all ears — and we're not only ready, willing and anxious to help you out with the answer, but we'll pay you, too! Real money!

In the September issue, IP started the ball rolling for a new regular monthly feature, a question and answer department tailored to the needs of the working projectionist. Many questions have been received and the answers will begin appearing next month.

You send in your questions, on anything at all having to do with the projection room, the screen, sound — or anything of special concern to projectionists. We'll try to get an authoritative answer for you.

If your question is of sufficient interest, we will print it, together with the answer and your name and address. *And*, if we print it, you get a check for three dollars. Should the same question be sent in more than once the earliest postmark will determine which writer gets the cash. Names of other questioners will be printed.

In any case, you will get an answer from IP, either in the mails or in the magazine.

So, get your questions in — fast! Address all letters to "Editor, What's Your Problem, International Projectionist, 19 West 44th St., New York 36, N. Y."

BOOK REVIEW

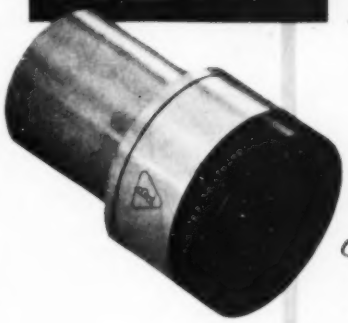
NEW SCREEN TECHNIQUES: *A symposium on 3-D, Wide-Screen, Cinerama, CinemaScope, Stereophonic Sound and other new screen techniques by 26 leading experts.* Edited by Martin Quigley, Jr., and with a preface by *Dr. Alfred N. Goldsmith. 208 pages. Quigley Publishing Company, Inc. $4.50.*

As editor of an interesting symposium on new developments in the film industry, Martin Quigley, Jr., has given us a valuable literary "package deal" in a book entitled simply "New Screen Techniques." Movie projectionists, along with critics, engineers and, for that matter, the public, are apt to be unable to see the forest for the trees in this new era of 3-Delirium.

"New Screen Techniques" does just exactly what its title implies, explains the sound and fury of the technological revolution now rocking the industry. Twenty-six articles, written by top experts in each department, discuss CinemaScope, stereophonic sound, the third dimension and other oddments of current film production and exhibition. The writers do their work in everyday language. Not only are the systems explained, with all the essential engineering information included, but the histories of the processes are given as well. Old hands at the projection business, for example, will well remember the 3-D of the twenties and thirties, the red and green celluloid "glasses" of the anaglyph system. That story is told in the book, with articles carrying 3-D through the present Polaroid era to the promised days of the Vectograph.

Editor Quigley's authors were well chosen. No less a celebrity than Fred Waller, inventor of Cinerama, tells about that system, along with articles on the same subject by Ralph Walker, Hazard E. Reeves and Lowell Thomas. The selling side of Cinerama is told by Lynn Farnol. Other big names dot the book, from Skouras to Sponable and from Zanuck to Koster. Leon Shamroy, cinematographer, tells about shooting the first CinemaScope film, "The Robe," and others tell about its direction. Space is too short to list all the authors. Suffice it here that the book covers the field, informatively and interestingly. However, in IP's view, the most important section is the one written by Universal's production chief, William Goetz. He makes the point that screens may be built as high as Haman's gallows, and as wide as the Pacific, but unless the "creative" brains of Hollywood make better pictures all the technical advances are so much wasted effort. To this, IP says a fervent "Amen!"—F. H.

NEW! f/1.8



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1853/1953 INTO A NEW CENTURY OF OPTICAL PROGRESS

BAUSCH & LOMB CENTENNIAL

Scene from "THE ROBE," 20th Century-Fox CinemaScope Epic

SMPTE HIGHLIGHTS

(Continued from page 14)

clip of a machine gun.

The negative carbon is a large graphite disc, rotated by a motor for even burning and held by the same motor in a constant relation to the positive electrode. In a subsequent issue IP will carry a complete description and pictures of this lamp, including details of its cooling system.

Fred Waller, the Cinerama man, had a paper of his own on the Cinerama process and had some things to say about wide-screen and 3-D. Nice things, naturally, about his own system. Even a one-eyed person can see depth in Cinerama, he said, adding the interesting bit of information that watch-makers and others who do precision work prefer the kind of monocular loop that fits into one eye. Binocular loops are available, he said, but when did anybody ever see a watchmaker using one ?

Evidence of the impact of CinemaScope on technical thinking is the fact that no less than eleven papers on various aspects of the new medium were read. These covered everything from multi-track magnetic soundheads to CinemaScope optics, screens and projection lighting.

Super Arc Lamp

Two papers were read on lighting. These, to be summarized later in IP and to be published in full in the journal of the SMPTE, were by Dr. Edgar Gretener, of Switzerland, and C. E. Greider, of the National Carbon Co., Cleveland. Dr. Gretener described the Super-Ventarc carbon light source and said that the ultimate limit for a 35-mm projection system will be approximately 50,000 lumens with no shutter and no film in the gate. This is said to be about twice as powerful as any previous projection lamp. Greider discussed high intensity carbons in the blown arc and stressed that radical changes in negative electrode design were necessary.

Next to the SMPTE Theatre Survey report (covered on page 14 in this issue of IP), the touchiest item at the convention was the matter of the new screens for 3-D and wide screen. Rival manufacturers listened politely while W. A. Shurcliff, of the Polaroid Corp., Cambridge, Mass., read a paper on "Screens for 3-D and Their Effect on Polarization." Dr. Shurcliff made it clear that his company, which does not manufacture screens but which is vitally interested in their efficiency, had tested just about every screen on the market. In the discussion following the paper screen brand names were named and some pertinent questions were asked. Several manufacturers fell over each other getting out of the room when the queries got too hot to handle.

3-D Demonstrated

During one of the sessions the Polaroid Corp. showed some 3-D pictures, using the new RCA 16-mm arc projectors described elsewhere in this issue of IP. To this reporter's eyes, the pictures were the clearest and best 3-D yet seen. Of course, projection conditions were just about perfect. Emphasis was on industrial use of stereo when extreme realism is of value in demonstrating processes or products. The same cameras were used in a demonstration of CinemaScope. The effect was startling when a 16-mm slide with a "squeezed" color clip from a Fox picture was shown. The picture was bright and sharp, with the figures thin as pencils. When an anamorphic lens was attached and the same slide re-projected the loss of light was amaz-

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ing. From a bright, sharp picture, the image faded away.

Amusing was a story told outside the conference room by an engineer involved in one of the early openings of "The Robe." Following the New York and Hollywood premieres of the CinemaScope picture Fox was anxious to have a new and perfect demonstration for critics and biggies of the industry in a city which shall be nameless. Installation men worked all night mounting the new big screen, finishing an hour or so before the zero hour for the premiere. The screen was tested — and the boys discovered that it had been mounted wrong side up. It was too late to do anything about it so the picture ran on schedule. The critics raved and the big shots beamed. The light on the big screen was perfection. Sharp and brilliant. On the orchestra floor, that is! The audience in the balcony couldn't see a thing. Reason? The lenticles of the wrong-side-up screen threw every bit of light downstairs.

New Soundhead

One of the more interesting papers was read at the final session by Dr. W. W. Wetzel, research scientist with the Minnesota Mining and Manufacturing Co., of St. Paul. Dr. Wetzel, winner of the SMPTE's Samuel L. Warner Memorial Award, described a new material for magnetic soundhead that promises to outlive the present soundheads by 100 to 1 or more. The paper, by Dr. Wetzel and R. J. Youngquist, identified the material as Ferrite, an iron oxide ceramic with high abrasion resistance. Such heads, Dr. Wetzel told IP, should be marketed in limited number by November.

Among the sizzling issues bandied about the cocktail circuit was that of standards — standards for screens, for aspect ratios, for sound, for sprocket sizes (whatever happened to the old standard ?) and for just about everything else standardizable. The SMPTE took a long step to getting sound in sync with the decision, announced by John K. Hilliard, chairman of the society's sound committee, that a set of test films would be made under SMPTE auspices. Purpose, of course, is to set performance standards for stereophonic. The industry is now working on specifications laid down by Twentieth Century-Fox.

An interesting paper was read by Thomas Baird, of the United Nations, who told of some peculiar problems faced by American producers selling in foreign markets. One example: symbolism as used in Hollywood films sometimes has a reverse effect. The owl in this country is the symbol of wisdom. In some other countries the same bird symbolizes stupidity. To us, the dove is the symbol of peace. In the Far East, including Korea, it is the symbol of death. The Russians are not so smart, either! Remember when they tried to put a dove over the peace tent at Panmunjom?

An incidental note on the convention must be made about the top job done in the press room by Leonard Bidwell, of RCA, Camden, N. J. Bidwell handled the trades and dailies for the SMPTE under difficult conditions and managed to keep everybody happy.

Altec Men Get Data

Altec Service Corporation's field engineers have received a special eight-page bulletin covering technical data necessary for theatre installations of the 20th Century Fox CinemaScope system.

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Motiograph Speeds "AAA" Soundhead Production

Motiograph, Inc., Chicago, is now in full production on its new "AAA" penthouse reproducer, the company announces. The new reproducer is designed for use with three or four track stereophonic sound magnetically recorded on either the picture film or a separate sound film.

The reproducer, which the company states may be used with any modern make or model of projector mechanism, is mounted below the upper magazine.

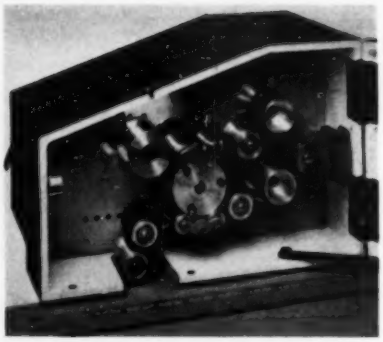
The position of the idler rollers on the AAA penthouse may be changed to accommodate the variation existing between the point of sound pickup and the projector aperture in the different makes and models of projection mechanisms. When the photographic sound reproducing facilities in the conventional theatre sound system are to be used, the film by-passes the magnetic pickup on the AAA. The AAA penthouse can thus always be retained in position no matter what type of sound reproduction method is employed.

The AAA is delivered with a 4-channel magnetic pickup to reproduce stereophonic sound recorded on the composite print as used in CinemaScope production. Motiograph will also make available a three channel magnetic pickup to reproduce stereophonic sound recorded on a separate sound film. This unit may be quickly and easily substituted for the 4-channel magnetic pickup.

Theatres with three projectors will be particularly interested in the provision in the AAA penthouse that permits the substitution of 3-channel magnetic pickups for the 4-channel pickups normally supplied.

Such theatres may install two AAA penthouse reproducers with 4-channel pickups and one AAA penthouse reproducer with a 3-channel pickup. By properly interlocking the projectors, the theatre owner can present stereophonic sound pictures recorded on a separate sound film and can also present 3-D pictures with stereophonic sound.

For theatres not already equipped with either a separate magnetic reproducer or three projectors, Motiograph will make available a separate reproducer which will include a three channel AAA penthouse reproducer. This unit will sell for less than the console type of separate magnetic reproducer recently sold by Motiograph.

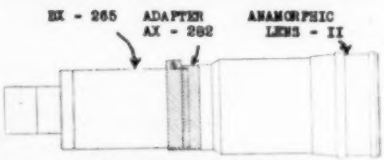


Above is the Motiograph "AAA Pent House" reproducer for use with 3 or 4-track sound-on-film stereophonic systems. Note the foot rule that shows the small size of the unit.

Kollmorgen Anamorphic Adapter

The Kollmorgen Optical Corp. now has available several adapters for fitting its projection lenses to the anamorphic lens attachments needed for the showing of CinemaScope films.

These adapters are designed solely for the purpose of connecting the anamorphic lenses to Kollmorgen projection lenses. They will not support the anamorphic lens; supports must be obtained from the projector manufacturer. The adapter clamp illustrated here is for fitting type II anamorphic lenses to the Kollmorgen BX-265 Super Snaplite 4-inch diameter lenses.



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CINEMASCOPE RECORDS

(Continued from page 16)

not capable of transmitting nearly as much light.

Despite whatever light losses may occur in the anamorphic attachment, there is a considerable light advantage for CinemaScope over the kind of wide-screen projection mentioned above.

Lack of Height

It is interesting to note that after the premiere at Grauman's Chinese Theatre, some Hollywood production executives and technical men complained about the lack of height in the CinemaScope picture. Many observers of the current film scene, including *International Projectionist*, cannot see how Fox expects to make a versatile medium out of the CinemaScope system unless the aspect ratio is reduced to at least 2 to 1.

If Twentieth Century-Fox had chosen an anamorphic lens that would magnify in the ratio of 2 to 1, they could have obtained many advantages on a screen of these proportions — more than sufficient light could easily be projected on the screen and the use of fewer or less powerful cylindrical segments in the lens would probably have resulted in a sharper picture than is now obtained.

However, they chose the more sensational 2.55 to 1 ratio with all its possibilities of impressive panoramic scenes, and the resulting effect of depth gained from such a wide angle of vision. This, they felt, was something new and exciting to present to a movie-bored public.

As mentioned before in this article, only time and the public response to future CinemaScope releases can really establish the position of CinemaScope in the future of the motion picture industry, but those who are critical should not sell it short. At the Roxy theatre in New York City, "The Robe" is earning more money than any picture ever did in a single theatre in the same period of time. It is expected to remain there until December at least and to earn in this one theatre 25 percent of the negative cost of producing the picture, or a clear million dollars at the Roxy alone. And that, as the saying goes, "ain't hay."

Also to be remembered is the sincere acclaim that "The Robe" and CinemaScope received from critics throughout the country. Already mentioned, because of their careful and balanced analysis, were the opinions of Bosley Crowther. These opinions however, are not typical of the extravagant praise that was general in the press.

For instance, Kate Cameron, writing in the *New York Daily News*, said, referring to CinemaScope: "It has ushered in a new era of film production. This is the most important event in the progress of photography and projection since Technicolor first tinted the screen."

Writing in the *Los Angeles Times*, Edwin Schallert states: "The grandeurs of ancient Rome are visualized in such a way in "The Robe" as to point to a new art evolution in films which will take the form of an amplification and broadening of the treatment of big and impressive subjects."

There is no need to present a further sampling of reviews — they all make the same point. CinemaScope has made a strong impression on the press. Judging from the record-breaking box office receipts in the large-city theatres throughout the country where "The Robe" has opened, it has made an equally strong impression on the public. If this impression remains after the novelty wears off, CinemaScope and related systems will indeed do much to revive the motion picture industry.

"Wonder-Lite" on Market

The Da-Lite Screen Co., of Chicago, is now making delivery on its new "Wonder-Lite" silver-finish screen designed for wide-screen and 3-D projection as well as standard 2-D film showings.

The Wonder-Lite is said to assure authentic color reproduction and the company claims it holds 98 to 99% of polarization in 3-D projection. A seamless appearance is achieved through perforated seams on sizes to 23½ feet. Larger sizes have solid seam stripping.

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IN THE SPOTLIGHT

(Continued from page 21)

tional Theatre Supply service man in the Buffalo area. He joined his first projectionist union in 1911, then known as the Electric Moving Picture Machine Operators Union, Auxiliary Local 4, IA, the forerunner of Local 233. He is a past president of the Local and for 11 years served as its treasurer. He is a member of the 25-30 Club.

Another visitor to IP offices last month was W. E. J. (Bill) Rose, member of Local 91, Boise, Idaho, and projectionist at the Ada Theatre there. He and his wife, Agnes, dropped in on their way home to Boise after an around-the world tour. The Roses (known in Boise as "The Four Roses" — pop, mom, and the two boys) formed the habit of taking a trip every few years. Two years ago it was Europe; before that they drove to Alaska along the Alcan Highway. For their next trip they plan to tour Mexico and Guatamala.

On this last trip Rose visited two foreign projection rooms — one at a sort of combination amusement park and drive-in theatre in Hong Kong, seating between 4000 and 5000 people. Picture shown was "Show Boat," with the dialogue in English. The projectionists were Chinese who could not speak English, and upon receiving a cue from somebody in the audience they would throw Chinese subtitles on a smaller screen next to the one on which the picture was being shown. Projection and sound were good, said Rose. The second theatre Rose visited was the Regal, the largest house in Bombay, India. Here, too, he found excellent projection and sound. Projection equipment included Strong lamps and rectifiers, Century projectors and National carbons.

From Canada came Lawrence Greer, member of Toronto Local 173. This was Greer's first visit to New York and he was very much taken with the city. He regretted his limited stay and promised to repeat the visit very soon. However, he managed to find the time to visit the Music Hall and Paramount Theatre projection rooms. He was very appreciative of the many courtesies shown him by the projection crews of both theatres, and he was particularly grateful to Harry Rubin, director of projection for Paramount Theatres, and to Charles Muller, chief projectionist at the Music Hall, who made these visits possible. Greer's visit to New York was a one-day affair, partly to have a look at "The Robe".

• Roy Brewer, who resigned last month as IA West Coast representative, has been named executive assistant to Steve Broidy, president of Allied Artists. Although the exact nature of Brewer's duties were not specified, it is believed that he will not participate in any labor matters for the company.

Atlas Kit Cuts Costs

Many small theatres in Southern California are using Atlas triple-magnetic reproducer kits in preference to acquiring separate magnetic reproducers when equipping for stereophonic sound, according to the Atlas Electronic Co., Hollywood. This kit, the company states, is being used for some stereosound installations on the M-G-M lot.

The parts provided by the kit operate in the standard projector sound head and eliminate the necessity of a separate reproducer. The projectionist merely threads differently for 3-channel magnetic reproduction than for optical. The optical system remains unaffected by the addition of magnetic reproduction, the Atlas Co. states.

This method of getting stereosound is less expensive than a full-scale separate reproducer system. In a 3-projector setup, the kit is installed on one machine which acts as a separate magnetic reproducer. With four machines, the two outside machines become stereophonic reproducers. In a 2-machine projection room, one machine is used as a reproducer. This latter arrangement requires a 5,000-foot intermission, as in the case of 3-D.

3-D Platters Now

An external third speaker for its high-fidelity home phonograph to produce "3-D sound effects" has been announced by Columbia records. The effect is produced by channeling upper-middle and high frequency sounds through the extra speaker while the two regular speakers reproduce the others.

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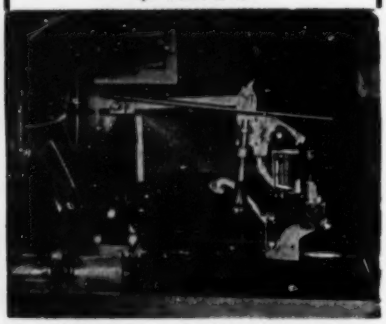

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STEREOSCOPIC PROJECTION

(Continued from page 12)

The cross-shaft gear-boxes are mechanically linked to the soundhead or projector drives by means of sprockets and chains; and the reduction gears in the boxes cause the shaft to revolve rather slowly — about 50 RPM — in order to eliminate vibration and to minimize the hazard to projectionists. Manufacturers' instructions anent the mounting of the gear-boxes should be followed to the letter. A switch must also be provided for turning both projector motors on simultaneously.

Most projectionists who have had experience with both mechanical and electrical interlocks prefer the latter. While mechanical interlocks of good manufacture are entirely satisfactory, many of the older ones were anything but good. Because so much trouble has been experienced with these, we must go on record as recommending electrical interlocks.

The electrical interlock consists essentially of two selsyn motors. These may be mounted on the front of the soundheads in place of the gear boxes of the mechanical interlock. In a certain make of equipment, the selsyns are mechanically linked to the drive-gearing of the projector by means of chains and sprockets. Each selsyn motor is electrically connected to the power mains, and both are interconnected. When the selsyns are switched on the projectors are "locked"; and then, when both of the projector drive motors are turned on simultaneously by means of a single switch which bypasses the separate motor switches, the two projectors start in synchronism and continue to run in step.

Polarizing Filters

Two polarizing filters are needed for 3-D projection, one "left" and one "right," and two frames, or holders, which are mounted over the projection ports perfectly level and perpendicular to the lenses. The filters may be plain sheets of Polaroid or Polaroid cemented between two "flats" of optical glass. They are fragile in any case; and the projectionist who does not have a spare set on hand is living too dangerously for comfort. The projectionist also needs a soft brush for wiping dust from the filters and two rolls or loops of test film for lining up the projectors.

Because the regular matte-surface motion-picture screen depolarizes polarized light, an aluminum-surfaced screen is essential for 3-D presentations. There are several satisfactory makes of aluminum screen available; and although it is usually better to purchase a new aluminum screen made specifically for 3-D than to resurface an old matte screen with aluminum paint, *seamless* matte screens which have been skillfully sprayed with suitable metallic paints often give acceptable results.

The exhibitor should make certain that he gets a *seamless* aluminum screen, and the projectionist should see to it that wrinkles have been removed by very careful stretching. Wrinkles, waves, seams, and creases are very conspicuous in "specular" screens, and will mar the finest projection.

The arc-lamps used for conventional projection may possibly not be adequate for 3-D projection. We have already seen that 3-D pictures projected upon a highly reflective aluminum screen, even when viewed from the middle of the auditorium, have but 70% of the brightness of regular movies projected on a matte screen. If conventional pictures appear to be unusually brilliant, the lamps need not be replaced; otherwise new lamps are needed.

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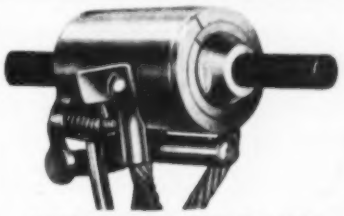

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turer recommends that theatres having 65 — 70 ampere arc-lamps should replace them with 85 or 100 ampere arc-lamps, while in smaller theatres, 65 — 70 ampere lamps should replace the present 1 KW and 46 ampere lamps.

It is especially important to replace all metal arc-lamp mirrors with silvered-glass mirrors. Metal mirrors reflect too much heat and may damage both the film and the polarizing filters.

In any case, theatres having only one generator must obtain another of similar rating and characteristics, inasmuch as multiple-arc generators are not designed for the continuous operation of two arcs beyond the few minutes required for change-overs. To supply both projectors from a single generator for a longer time than 5 minutes will overheat it and possibly damage the windings.

Generators for 3-D

The two generators will require special switching equipment to permit both lamps to be powered by a single generator during the projection of conventional "2-D" films.

It is highly desirable to replace old-style uncoated F:2.5 projection lenses with modern anti-reflection-coated F:1.9 lenses matched to within one quarter of one per cent for focal length.

The matter of sound equipment for 3-D presentations is a source of considerable worry to the owners of medium-and small-sized theatres. True, all 3-D productions released to date are furnished with standard optical sound-tracks, but stereophonic magnetic tracks recorded on a separate film are available for many of these releases. To play these stereophonic recordings, the following rather expensive items are needed:

1 duplex 3-track magnetic reproducing machine equipped with electrical interlock to maintain synchronous operation with the picture projectors.

3 high-fidelity amplifiers with associated power equipment.

3 identical loudspeaker systems to be placed behind the middle and both sides of the screen.

6 or more loudspeaker systems placed at the back and sides of the auditorium for sound effects.

The old theatre amplifier will be used to supply the sound effects, recorded in the standard optical track, to the auditorium speakers.

3-D CANDIDATE RUNS FOR MAYOR OF NEW YORK

Bob Wagner, son of the late Senator Wagner running on the Democratic ticket in New York City's red hot mayoralty contest, has ordered campaign buttons billing him as a "3-D candidate"—*Down-to-earth, Devoted, Democratic.*

Once the 2-strip 3-D equipment has been installed, the projectionist will find that many new and unusual duties have been thrust upon him. His first task, to be repeated at intervals, involves the mechanical adjustment and optical alignment of the projectors.

The intermittent movement and film-gate tension pads of each machine should receive attention because picture-jumpiness and side-sway cannot be tolerated in 3-D. The flanged guide-roller at the top of the gate-casting should be centered to provide perfect alignment of the film as it flutters by the aperture.

Next month's article, which concludes this series, will continue the discussion with particular reference to the requirements made by 3-D on the projector mechanism and lamphouse. Also covered will be a variety of practical problems the projectionist will encounter in setting up for, and showing, 3-D.

[TO BE CONTINUED]

New York Roxy Has "Excelite 135"

Designed to burn 10-mm Hitex carbons at 135 amperes, or 11-mm regular carbons at 120 amperes for maximum light on wide screens, the new National Excelite "135" projection arc lamp with the Reflect-O-Heat unit has been installed in many of the leading theatres which are presenting the CinemaScope production, "The Robe." Included in the installations is the Roxy Theatre, in New York.

The Excelite "135" is being widely installed for use with 3-D presentations, since the full hour running period of 5000-foot 3-D reels is possible with the burning of 10-mm Hitex carbons at 120 amperes, or the 11-mm regular carbons at 115 amperes.

The color value and intensity of the light at the screen is maintained constant throughout the full trim, without the need of manual adjustment, by an automatic arc crater positioner, the company states.

National's new Reflect-O-Heat unit, it is claimed, permits a great increase in light at the screen without a corresponding increase in heat at the aperture. Positioned in the path of the light beam, the Reflect-O-Heat unit passes the visible light while diverting the heat rays back into the lamphouse from which it is removed through the lamphouse draft stack.

Louis Daguerre and Nicephore de Niepce independently invented the famous "Daguerrotype" photographs on metal, in 1827.

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Technical Sergeant
Robert S. Kennemore, USMC
Medal of Honor

Under His Foot, the Live Grenade

THE MACHINE GUN belonged to E Company, Second Battalion, Seventh Marines. It was under the command of Technical Sergeant Robert Sidney Kennemore.

It was busy. For on this November night fanatical Red masses were swamping Marine defense positions north of Yudam-ni.

Fighting was close and desperate. Fifteen yards in front of the gun, a Red soldier raised his body briefly and sent a grenade into the air. It landed squarely among the crew. In a split second, Sergeant Kennemore had covered it with his foot.

There was a violent, muffled explosion, but not a man was hurt. Not a man except Sergeant Kennemore. He had given both his legs to save his comrades' lives.

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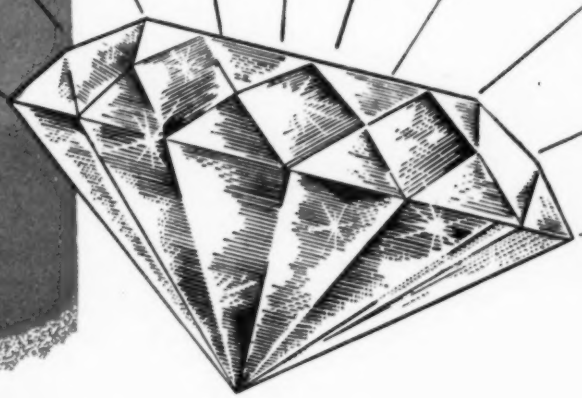

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